

**FINAL SUBMITTAL**

**VOLUME IV  
APPENDICES H-I**

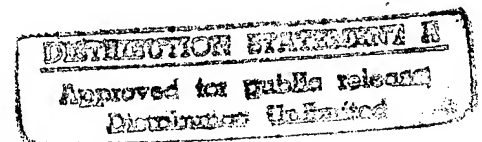
**FEASIBILITY STUDY FOR EXPANSION OF  
ENERGY MONITORING AND CONTROL SYSTEM (EMCS)  
FORT DRUM, NEW YORK**

Prepared for

**NORFOLK DISTRICT  
CORPS OF ENGINEERS, CENAO-EN-MC  
803 FRONT STREET, NORFOLK, VIRGINIA 23510**

Under

**U.S. ARMY ENGINEER DISTRICT, MOBILE  
INDEFINITE DELIVERY A-E CONTRACT  
CONTRACT NO. DACA01-94-D-0033  
DELIVERY ORDER NO. 0006**



EMC No. 1406-006  
January 1997

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By

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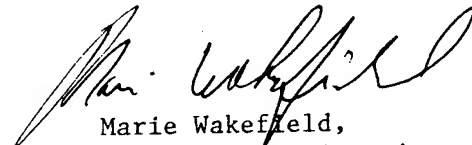


DEPARTMENT OF THE ARMY  
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS  
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Marie Wakefield,  
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### EXECUTIVE SUMMARY

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## LIST OF ABBREVIATIONS

AC	-	air conditioning
ACC	-	anticipated contract cost
ACCU	-	air cooled condensing unit
ACM	-	asbestos containing material
ACU(s)	-	auxiliary control unit(s)
AHU	-	air handling unit
AI	-	analog input
AO	-	analog output
ASCII	-	American Standard Code for Information Interchange
ASHRAE	-	American Society of Heating, Refrigeration, and Air conditioning Engineers
B/C	-	benefit-to-cost ratio
BCD	-	binary coded decimal
BLDG	-	building
BEACON	-	Building Energy Simulation Program
Btu	-	British thermal units
Btuh	-	British thermal units per hour
B/W	-	black and white
C	-	Celsius
CCC	-	central communications controller
ccf	-	one hundred (100) cubic feet
CCU	-	central control unit

cf	-	cubic foot, cubic feet
cfm	-	cubic feet per minute
CLM	-	command line mnemonic
CLMI	-	command line mnemonic interpreter
COE	-	Corps of Engineers
COS	-	central operator station
CPU	-	central processing unit
CRT	-	cathode ray tube
CU(s)	-	control unit(s)
CWE	-	current working estimate
d	-	day(s)
DCP	-	duty cycle program
DEH	-	Directorate of Engineering and Housing
DHW	-	direct memory access
DI	-	digital input
DO	-	digital output
DOD	-	Department of Defense
DPW	-	Department of Public Works
DTM	-	data transmission media
DX	-	direct expansion
E/C	-	energy-to-cost ratio
ECIP	-	Energy Conservation Investment Program
ECO	-	energy conservation opportunity

EEAP	-	energy engineering analysis program
eff	-	efficiency
elec.	-	electricity
EMC	-	EMC Engineers, Inc.
EMCS	-	energy monitoring and control system
EMI	-	electromagnetic interference
ESCO	-	energy service company
EZ-DOE	-	Building Energy Simulation Program
F	-	Fahrenheit
FO	-	fiber optic(s)
ft	-	foot, feet
ft <sup>2</sup>	-	square feet
FY	-	fiscal year
gal	-	gallon(s)
hp	-	horsepower
hr	-	hours(s)
H & V	-	heating and ventilating
HVAC	-	heating, ventilation, and air conditioning
in.	-	inch(es)
I/O	-	input/output
kBtu	-	one thousand British thermal units
kcf	-	one thousand cubic feet



klb	-	one thousand pounds
kva	-	kilovolt - ampere
kW	-	kilowatt, one thousand watts
kWh	-	kilowatt-hour, one thousand watt-hours
lb	-	pound(s)
LCCA	-	life cycle cost analysis
LCCID	-	life cycle cost in design
LED	-	light emitting diode
LPG	-	liquefied petroleum gas
MAU	-	make-up air unit
MBtu	-	one million Btu
MCR	-	master control room
MHz	-	megahertz
Mh	-	man-hours(s)
mo	-	months(s)
MW	-	megawatt, one million watts
MWh	-	megawatt-hour, one million watt-hours
MZAHU	-	Multizone air handling unit
NA	-	Not active or Not applicable
NG	-	natural gas
NOAA	-	National Oceanic and Atmospheric Administration
no.	-	number
OA	-	outside air

O&M	-	operation and maintenance
PC	-	personal computer
PM	-	preventative maintenance
PROM	-	programmable read-only memory
psi(a)(g)	-	pounds per square inch (absolute) (gage)
RAM	-	random access memory
RCU(s)	-	remote control unit(s)
RTC	-	real-time clock
RTDOS/E	-	real-time disk operating system /executive
S&A	-	Supervision and Administration
scfm	-	sea-level cubic feet per minute
SES	-	shared energy savings
SIOH	-	supervision, inspection, and overhead
SIR	-	savings-to-investment ratio
SPW	-	single present worth
sq.ft.	-	square feet
st/sp	-	start/stop
stm	-	steam
SZAHU	-	single zone air handling unit
t	-	ton
temp	-	temperature
TRY	-	test reference year

UA	-	overall heat transfer coefficient (Btu/hr/ft <sup>2</sup> /°F)
UCU(s)	-	unitary control unit(s)
UH	-	unit heater
UMCS	-	utility monitoring and control system
UPW	-	uniform present worth
VAV	-	variable air volume
wk	-	week(s)
yr	-	year(s)

**APPENDIX H**  
**FIELD SURVEY NOTES**

**FIELD SURVEY NOTES**

BUILDING 36

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG:

36

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 36BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 36 BLDG NAME: WILCOX DENTAL CLINICZONE NO. 1 FUNCTION: MAIN BLDG (SECTIONS A & B OF PRESENT BUILDING)

OCCUPANCY HOURS:	M-F	700	TO	1600	SAT	0	TO	0
	SUN	0	TO	0				

PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	°F
	SUMMER OCC	°F	UNOCC	°F

ZONE NO. 2 FUNCTION: ADDITION (SECTION C)

OCCUPANCY HOURS:	M-F	700	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				

PRESENT TEMP	WINTER OCC	°F	UNOCC	°F
	SUMMER OCC	°F	UNOCC	°F

ZONE NO.  FUNCTION: 

OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					

PRESENT TEMP	WINTER OCC	°F	UNOCC	°F
	SUMMER OCC	°F	UNOCC	°F

REMARKS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG:

**36**

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **36AC1M****AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AC1M</b>	AHU NO.	<b>MAIN MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>A &amp; B</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL	
2.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.	213				MODEL
760	CFM-HTG	760	CFM-CLG	34%	MIN %OA	100%	MAX %OA	16.7%	% HTG AREA SERVED	
COMMENT: 4 1/2										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
<b>X</b>	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	<b>X</b> CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		0	2400	2400	2400	2400	2400	0			
REQUIRED START TIME		0	700	700	700	700	700	0			
REQUIRED STOP TIME		0	1600	1600	1600	1600	1600	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>Y</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				

COMMENTS:





FILE: 36AC3M

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: **36AC4M**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	Y EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	( Y = YES ; N = NO )				
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG:

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 36ACC1M

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC1M	CHILLER/COMPRESSOR NO.	OUTSIDE MAIN MER	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC1,2,3,4
	ABSORPTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
X	CHW	DX	OTHER

**NAMEPLATE:**

CHILLER TRANE	MFG.	CGAA0254MDSICD3C4P362ER	MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	20.8 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
VOLTS		AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	7.5 HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	HP
COMMENTS:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	0	2400	2400	2400	2400	2400	0				
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG:

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 36ACC2M

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC2M	CHILLER/COMPRESSOR NO.	OUTSIDE MAIN MER	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC1,2,3,4
	ABSORPTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
X	CHW	DX	OTHER

**NAMEPLATE:**

CHILLER TRANE	MFG.	CGAA0254MDSICD3C4P362ER	MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	20.8 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
VOLTS		AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	7.5 HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	HP

COMMENTS:

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		0	2400	2400	2400	2400	2400	0			
REQUIRED START TIME		0	700	700	700	700	700	0			
REQUIRED STOP TIME		0	1600	1600	1600	1600	1600	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					

COMMENTS:

FILE: 36AHU1A

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)
		MA CONTROL	ECONO-DB	ECONO-ENT		OTHER
DEMAND LIMIT:		( Y = YES ; N = NO )				
COMMENTS:	ADDITION HAS A HUMIDIFIER WITH 50 LBS/HR CAPACITY					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG:

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **36B1&2M****BOILER & CONVERTER SURVEY OBSERVATIONS**

<b>B1&amp;2M</b>	BOILER/CONVERTER NO.	MAIN MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	MAIN BLDG (SECTIONS A & B)	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG	X	HW		TEMP.		BOILER TYPE:
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							26% 67%	% HTG AREA SERVED	
							Fuels 8	BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.		MODEL	1004000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL	1004000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
0.1667	HW PUMP 1 - HP	ERR	MFG.		MODEL
0.1667	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		0	2400	2400	2400	2400	2400	0			
REQUIRED START TIME		0	700	700	700	700	700	0			
REQUIRED STOP TIME		0	1600	1600	1600	1600	1600	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 36

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 36B3M

**BOILER & CONVERTER SURVEY OBSERVATIONS**

B3M	BOILER/CONVERTER NO.	MAIN MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	MAIN BLDG (SECTIONS A & B)	SERVES AREA

**UNIT TYPE:**

X	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS	X	ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							67%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.		MODEL	381150	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		0	2400	2400	2400	2400	2400	0			
REQUIRED START TIME		0	700	700	700	700	700	0			
REQUIRED STOP TIME		0	1600	1600	1600	1600	1600	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>N</b>	RA (Y/N)	<b>Y</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									



**FIELD SURVEY NOTES**

BUILDING 119

LOCATION: FORT DRUM, NY

BLDG: 119

EMC NO.: 1406-006

DATE: 11/07/94

PREPARED BY: BG

CHECKED BY:

FILE: 119BDS

## VI. BUILDING DATA SURVEY OBSERVATIONS

BLDG NO: 119

BLDG NAME: BN HQ &amp; CLASSROOM

ZONE NO.		FUNCTION: ZONE OF P175							
OCCUPANCY HOURS:		M-F	700	TO	1800	SAT	0	TO	0
		SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	71.0 °F		UNOCC		°F			
	SUMMER OCC	°F		UNOCC		°F			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC	øF			
	SUMMER OCC		øF		UNOCC	øF			

ZONE NO.		FUNCTION:						
OCCUPANCY HOURS:		M-F		TO		SAT		TO
		SUN		TO				
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF			
	SUMMER OCC	øF		UNOCC	øF			

[illegible]

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 119

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 119HV1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

HV1	AHU NO.	MER	LOCATION (RM)
	REF. SYS. SERVING AHU	CLASSROOMS	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	1	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

JOHN ZINK					MFG.	HWBC- 4UL				MODEL
0.8	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
1800	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	10.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE	STM		HW		ELEC		MOD VLV	PREHEAT
	NONE	STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE	STM		HW		ELEC		MOD VLV	REHEAT
X	NONE	STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	600	600	600	600	600	0	TIMECLOCK?		
PRESENT STOP TIME		0	1800	1800	1800	1800	1800	0			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	X 0	X 0	X 0	X 0	X 0	1	1	1

X - Ventilation

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							

COMMENTS:

HV-1&amp;2 68464 BTUH (EACH)

HV-3 39123 BTUH

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 119

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 119HV2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

HV2	AHU NO.	MER	LOCATION (RM)
	REF. SYS. SERVING AHU	CLASSROOMS	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	1	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

JOHN ZINK				MFG.	HWBC- 4UL				MODEL
0.8	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.					MODEL
1800	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	10.0%	% HTG AREA SERVED
COMMENT:									

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	600	600	600	600	600	0	TIMECLOCK?		
PRESENT STOP TIME		0	1800	1800	1800	1800	1800	0			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	X 0	X 0	X 0	X 0	X 0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				
COMMENTS:					
	HV-1&2 68464 BTUH (EACH)				
	HV-3 39123 BTUH				

FILE: **119HV3**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
HV-1&2 68464 BTUH (EACH)									
HV-3 39123 BTUH									

FILE: 119HXAHU

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		PSIG	200	HW SUPPLY					
RESET CONTROL (oF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)		OTHER					
COMMENTS:									



**FIELD SURVEY NOTES**

BUILDING 173



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: BARRACKS

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 173BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 173

BLDG NAME: BARRACKS, ZONE OF 175

ZONE NO.	1	FUNCTION: ENTIRE BLDG						
OCCUPANCY HOURS:	M-F	0	TO	2400	SAT	0	TO	2400
	SUN	0	TO	2400				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	70.0 °F				
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	°F	UNOCC	°F				
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	°F	UNOCC	°F				
	SUMMER OCC	°F	UNOCC	°F				

REMARKS: CONVECTOR: C-1 3.8 MBH LOCATED AT STAIRS & LAUNDRY  
EXHAUST FANS ARE INCLUDED ON BUILDING 175 BDS SHEET

CONDENSATE RETURN UNIT: 3HP  
HEATING CIRCULATION PUMP: 1.5 HP

FILE: **175B3**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						
BLDG 173 IS A ZONE OF 175.						

FILE: **173BDS** BG

COMMENTS:

FILE: **173HX4&5**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

**FIELD SURVEY NOTES**

BUILDING 174

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 174

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 174AHU2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-2</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU		SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
11700	CFM-HTG		CFM-CLG	6%	MIN %OA	100%	MAX %OA	50.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

CONTROLS:									
		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 174

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 174AHU1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-1</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU		SERVES AREA

**UNIT TYPE:**

	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
X	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
2	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
11700	CFM-HTG		CFM-CLG	8% MIN %OA	100%	MAX %OA	50.0%	% HTG AREA SERVED		
COMMENT:										

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	0	0	0	0	0	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
<b>THERMOSTAT TYPE:</b>		SINGLE STPT		DUAL SETPNT		SETBACK			
<b>SPACE SETPOINT (°F):</b>		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
<b>OTHER SETPOINTS (°F):</b>		HOT DECK		COLD DECK		MIXED AIR		OTHER	
<b>DAMPER CONTROL:</b>	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
<b>DEMAND LIMIT:</b>		(Y = YES ; N = NO)							

COMMENTS: \*\*\*\*NOTE: THIS BUILDING RECEIVES CONVERTED HW FROM BLDG 175

TOTAL HEATING FOR BLDG 1735.7 MBH

BUILDING HAS 5 DEHUMIDIFIERS WITH 3000 WATT MOTORS EACH

**FIELD SURVEY NOTES**

BUILDING 175



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 175

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 175BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 175

BLDG NAME: BARRACKS AND MESS HALL

ZONE NO.	1	FUNCTION: KITCHEN, DINING						
OCCUPANCY HOURS:	M-F	0	TO	2400	SAT	0	TO	2400
	SUN	0	TO	2400				
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.	FUNCTION: ADMIN							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

REMARKS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 175

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 175B1&amp;2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

B1&2	BOILER/CONVERTER NO.	MECH 1	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

X	STEAM	PSIG	HW	TEMP.	BOILER TYPE:
X	NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
	STM/HW	HTHW/HW	HTHW/STM	OTHER	CONVERTER TYPE:
	SPACE HEAT	DHW	OTHER		USE:
COMMENT:				% HTG AREA SERVED	
				BB RADIATION ONLY	

**NAMEPLATE:**

KEWANEE	MFG.	HF-125	MODEL	4184000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL	4184000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
3	HW PUMP 1 - HP		MFG.		MODEL
3	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 175

EMC NO.: 1406-006  
 DATE: 16-Nov-94  
 PREPARED BY: BG  
 CHECKED BY:  
 FILE: 175DHW

### DOMESTIC HW SURVEY OBSERVATIONS

DHW	BOILER/CONVERTER NO.	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	SERVES AREA

### UNIT TYPE:

	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
X	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:

COMMENT:

### NAMEPLATE:

	MFG.	MODEL	CAPACITY OUTPUT (BTUH,KW)
	MFG.	MODEL	CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

1	HW PUMP 1 - HP	BALDOR	MFG.	JM3115	MODEL
1	HW PUMP 2 - HP	MARATHON	MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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### OPERATION:

OPERATION:											
HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

### CONTROLS:

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

FILE: **175HV1**

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>Y</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>N</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 175HV2

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>Y</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>N</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 175

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 175HX1&amp;2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1&2	BOILER/CONVERTER NO.	HEATING PLANT (BSMNT)	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	BLDG. HEATING	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X	HTHW/HTW	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMME HX-2 IS STAND-BY FOR HX-1			% HTG AREA SERVED	
			BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.	MODEL	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
	MFG.	MODEL	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
7.5	HW PUMP 1 - HP	MARATHON	MFG. HVF213CTER7359BB- MODEL
	HW PUMP 2 - HP		MFG. MODEL
7.5	HW PUMP 3 - HP	BALDOR	MFG. MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	0	0	0	0	0	0				
REQUIRED STOP TIME	2400	2400	2400	2400	2400	2400	2400				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 175

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 175HX3

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX3	BOILER/CONVERTER NO.	BACH MECH ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
X	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMME HX-2 IS STAND-BY FOR HX-1							% HTG AREA SERVED		
							BB RADIATION ONLY		

**NAMEPLATE:**

OLD DOMINION	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	HW PUMP 1 - HP	MARATHON	MFG.	HVF213CTER7359BB-	MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP	BALDOR	MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

FILE: 175HX4&5

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					



**FIELD SURVEY NOTES**

BUILDING 1240

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: TOE MAINT

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW/BG

CHECKED BY:

FILE: 1240BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 1240 BLDG NAME: TOE MAINT

ZONE NO.	1	FUNCTION: TOE MAINT					
OCCUPANCY HOURS:	M-F	600	TO	1800	SAT		TO
	SUN		TO				
PRESENT TEMP	WINTER OCC	68.0 °F	UNOCC	50.0 °F			
	SUMMER OCC	72.0 °F	UNOCC	°F			

ZONE NO.		FUNCTION:					
OCCUPANCY HOURS:	M-F		TO		SAT		TO
	SUN		TO				
PRESENT TEMP	WINTER OCC	°F	UNOCC	°F			
	SUMMER OCC	°F	UNOCC	°F			

ZONE NO.		FUNCTION:					
OCCUPANCY HOURS:	M-F		TO		SAT		TO
	SUN		TO				
PRESENT TEMP	WINTER OCC	°F	UNOCC	°F			
	SUMMER OCC	°F	UNOCC	°F			

REMARKS: TOTAL POWER OF EXHAUST FANS: 5HP  
TOTAL POWER OF AIR COMPRESSORS: 80 HP

TOTAL HEAT OUTPUT OF UNIT HEATERS AND CONVECTORS: 507 MBH

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 1240

EMC NO.: 1406-006  
 DATE: 11-NOV-94  
 PREPARED BY: CSW  
 CHECKED BY: BG  
 FILE: 1240DHW

DOMESTIC HW SURVEY OBSERVATIONS			
DHW	BOILER/CONVERTER NO.	BOILER RM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WATER HTG.	SERVES AREA

UNIT TYPE:							
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC
	STM/HW		HTHW/HW		HTHW/STM		OTHER
FUELS:							
CONVERTER TYPE:							
COMMENT:							

NAMEPLATE:					
BOCK	MFG.	73 E	SER #283271	MODEL	250
CAPACITY OUTPUT (BTUH,KW)					
	MFG.			MODEL	
CAPACITY OUTPUT (BTUH,KW)					
DOMESTIC HW CIRCULATION PUMP:					
	HW PUMP 1 - HP			MFG.	MODEL
	HW PUMP 2 - HP			MFG.	MODEL
	HW PUMP 3 - HP			MFG.	MODEL
COMMENT:					

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON

OPERATION:									
HOURS ON:	S	M	T	W	T	F	S	COMMENT	
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?	
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400		
REQUIRED START TIME	0	600	600	600	600	600	0		
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0		
MONTHS ON:									
J	F	M	A	M	J	J	A	S	O
1	1	1	1	1	1	1	1	1	1

CONTROLS:							
	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC
SETPOINTS			HW SUPPLY				
COMMENTS:							

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 1240

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 1240B1-482

**BOILER & CONVERTER SURVEY OBSERVATIONS**

B1 & B2	BOILER/CONVERTER NO.	BOILER RM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							99%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

WELL MCLAIN	MFG.	771967	MODEL	2480	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
WELL MCLAIN	MFG.	771967	MODEL	2480	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
2	HW PUMP 1 - HP		MFG.		MODEL
2	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	600	600	600	600	600	0	TIMECLOCK?		
PRESENT STOP TIME		0	1800	1800	1800	1800	1800	0	NO		
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 1240

EMC NO.: 1406-006

DATE: 16-Nov-93

PREPA

CSW

CHECKED BY:

BG

FILE: 1240HV1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

HV-1	AHU NO.	MER	LOCATION (RM)
	REF. SYS. SERVING AHU	MEN/WOMEN/CORD	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

CENTRALE				MFG.					MODEL	
1.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
2800	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	1.4%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME		0	600	600	600	600	600	0	TIMECLOCK?			
PRESENT STOP TIME		0	1800	1800	1800	1800	1800	0	YES			
REQUIRED START TIME		0	600	600	600	600	600	0				
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0				
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	N EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:		(Y = YES ; N = NO)				
COMMENTS:						

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 1240

Building Sq.Ft.: 40,491

System Type 10

System Name: HOT WATER BOILER AND PUMPS

System Number: B1

EMC NO.: 1406-006

DATE: 30-Mar-95

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

## Typical Building Information

Category	Construction	Use	Occ.	Day
2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	3.75%
TON CAPC.	0
MBTU CAPC.	0.00246
kW/Ton	0
MOSON	6
EFF	0.82
LOOK-UP VALUE	
EFFHP	78.00% 78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSVA	0	
Heating HRSVA	0	
C/H HRSVA	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

30-Mar-95

PAGE 2 OF 2

Bldg Number: 1240  
System Type: 10  
System Name: HOT WATER BOILER AND PUMPS  
System Number: B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	88.8	
<b>Sub Total</b>	<b>0.0</b>	<b>287.5</b>	<b>88.8</b>	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance, Run Time, and Safety Alarms				3
<b>TOTAL</b>	<b>0.0</b>	<b>287.5</b>	<b>91.9</b>	<b>3</b>

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 1240

Building Sq.Ft.: 40,491

System Type 10

System Name: HOT WATER BOILER AND PUMPS

System Number: B2

EMC NO.: 1406-006

DATE: 30-Mar-95

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

## Typical Building Information

Category	Construction	Use	Occ.	Day
2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	3.75%
TON CAPC.	0
MBTU CAPC.	0.00246
kW/Ton	0
MOSON	6
EFF	0.82
LOOK-UP VALUE	
EFFHP	78.00% 78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAB	0	
Heating HRSAB	0	
C/H HRSAB	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00



# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date: 30-Mar-95

PAGE 2 OF 2

Bldg Number: 1240  
System Type: 10  
System Name: HOT WATER BOILER AND PUMPS  
System Number: B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	88.8	
<b>Sub Total</b>	<b>0.0</b>	<b>287.5</b>	<b>88.8</b>	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance, Run Time, and Safety Alarms				3
<b>TOTAL</b>	<b>0.0</b>	<b>287.5</b>	<b>91.9</b>	<b>3</b>

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 1240

Building Sq.Ft.: 40,491

System Type: 1  
System Name: H&V UNIT WITHOUT RETURN FAN  
System Number: HV-1

EMC NO.: 1406-006

DATE: 30-Mar-95

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

## Typical Building Information

Category	Construction	Use	Occ.	Day
2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	2800
CFM - CLG	0
% OA	100.00%
% Area	92.50%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	0.82
LOOK-UP VALUE	
EFFHP	69.20% 69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSVA	0	
Heating HRSVA	0	
C/H HRSVA	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date: 30-Mar-95

PAGE 2 OF 2

Bldg Number: 1240

System Type 1

System Name: H&V UNIT WITHOUT RETURN FAN

System Number: HV-1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	2,190.4	
<b>Sub Total</b>	<b>0.0</b>	<b>162.0</b>	<b>2,190.4</b>	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	76.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance, Run Time, and Safety Alarms				3
<b>TOTAL</b>	<b>0.0</b>	<b>162.0</b>	<b>2,266.8</b>	<b>3</b>

**FIELD SURVEY NOTES**

BUILDING 1750

TYPICAL: 1240

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 1750

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 1750BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 1750 BLDG NAME: MOTOR REPAIR SHOP

ZONE NO.	1		FUNCTION: SHOP B, MAINTENANCE ROOM (RM7)						
OCCUPANCY HOURS:	M-F	600	TO	1730	SAT	0	TO	0	
	SUN	0	TO	0					
PRESENT TEMP	WINTER OCC	70.0 øF		UNOCC	65.0 øF				
	SUMMER OCC	øF		UNOCC	øF				

ZONE NO.		2		FUNCTION: PART SUPPLY					
OCCUPANCY HOURS:		M-F	600	TO	1730	SAT	0	TO	0
		SUN	0	TO	0				
PRESENT TEMP			øF		UNOCC	øF			
	SUMMER OCC		øF		UNOCC	øF			

ZONE NO.	3		FUNCTION: SHOP A, MIRROR OF SHOP B						
OCCUPANCY HOURS:	M-F	600	TO	1730	SAT	0	TO	0	
	SUN	0	TO	0					
PRESENT TEMP	WINTER OCC	75.0 øF		UNOCC	65.0 øF				
	SUMMER OCC	øF		UNOCC	øF				

REMARKS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 1750

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 1750BDS2

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 1750

BLDG NAME: MOTOR REPAIR SHOP

ZONE NO.	4	FUNCTION: ADMIN						
OCCUPANCY HOURS:	M-F	600	TO	1730	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	73.0 øF		UNOCC	øF			
	SUMMER OCC	øF		UNOCC	øF			

ZONE NO.		5		FUNCTION:		STORAGE											
OCCUPANCY HOURS:		M-F		600		TO		1730		SAT		0		TO		0	
		SUN		0		TO		0									
PRESENT TEMP		WINTER OCC		øF		UNOCC		øF									
		SUMMER OCC		øF		UNOCC		øF									

ZONE NO.	6	FUNCTION:		INSPECTION BAY				
OCCUPANCY HOURS:	M-F	600	TO	1730	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF			
	SUMMER OCC	øF		UNOCC	øF			

REMARKS: ADMIN: OPEN WEEKENDS ON REQUEST

STORAGE (ZONE 5): HEATED WITH 21 SPACE HEATERS

INSPECTION BAY: ROOF EXHAUST FAN IS RUN IN WINTER WHENEVER BLDG IS OCCUPIED

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 1750

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 1750B1&amp;2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

B1&2	BOILER/CONVERTER NO.		LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG	X	HW		TEMP.		BOILER TYPE:
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							61%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

HB SMIT	MFG.	2-8 C3-0	MODEL	693900	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
HB SMITH	MFG.	2-8 C-30	MODEL	693900	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
7.5	HW PUMP 1 - HP	MARATHON	MFG.	UVM 213TTDB702GGP	MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		700	700	700	700	700	700	700	TIMECLOCK?		
PRESENT STOP TIME		1500	1500	1500	1500	1500	1500	1500	YES		
REQUIRED START TIME		700	700	700	700	700	700	700			
REQUIRED STOP TIME		1500	1500	1500	1500	1500	1500	1500			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 1750

EMC NO.: 1406-006  
 DATE: 16-NOV-94  
 PREPARED BY: CSW  
 CHECKED BY: BG  
 FILE: 1750DHW

DOMESTIC HW SURVEY OBSERVATIONS			
DHW	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

UNIT TYPE:									
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
COMMENT:									

NAMEPLATE:					
AO SMITH	MFG.	COF 315A 824	MODEL	315000	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)
DOMESTIC HW CIRCULATION PUMP:					
	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON

OPERATION:											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	NO			
REQUIRED START TIME	0	600	600	600	600	600	0				
REQUIRED STOP TIME	0	1730	1730	1730	1730	1730	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

CONTROLS:									
		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS				HW SUPPLY					
COMMENTS:									



FILE: 1750HV1

CONTROLS:									
		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									



## 1750HV3

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 1750

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE N

1750HV4

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>HV4</b>	AHU NO.	<b>INSPECTION BAYS</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>INSPECTION</b>	SERVES AREA

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
1.5	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
4000	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	6.3%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE	STM		HW		ELEC		MOD VLV	PREHEAT
	NONE	STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE	STM		HW		ELEC		MOD VLV	REHEAT
X	NONE	STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		700	700	700	700	700	700	700	TIMECLOCK?		
PRESENT STOP TIME		1500	1500	1500	1500	1500	1500	1500	ON-OFF AUTOMATIC		
REQUIRED START TIME		700	700	700	700	700	700	700	SWITCH		
REQUIRED STOP TIME		1500	1500	1500	1500	1500	1500	1500			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL :		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 1750

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 1750RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

FT1-8	PER RAD NO.		LOCATION (RM)
BOILER	SOURCE OF HEATING	PART OF ADMIN	SERVES AREA

**UNIT TYPE:**

STEAM	X	HW		ELECTRIC				
OTHER								
COMMENT:								

**NAMEPLATE:**

HW PUMP 1 - HP		MFG.		MODEL
HW PUMP 2 - HP		MFG.		MODEL
HW PUMP 3 - HP		MFG.		MODEL
HW PUMP 4 - HP		MFG.		MODEL
COMMENT:			27.7%	% AREA HEATING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		700	700	700	700	700	700	700	TIMECLOCK?		
PRESENT STOP TIME		1500	1500	1500	1500	1500	1500	1500			
REQUIRED START TIME		700	700	700	700	700	700	700			
REQUIRED STOP TIME		1500	1500	1500	1500	1500	1500	1500			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 2060

TYPICAL: 2050, 2070, 2072, 2074

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

BLDG: MNT HANGER AVUM FILE: 2060BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 2060 BLDG NAME: MNT HANGER AVUM - C.A.C. HANGER

ZONE NO.	1	FUNCTION:	HANGER BAY NORTH					
OCCUPANCY HOURS:	M-F	600	TO	*	SAT	*	TO	*
	SUN	*	TO	*				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	60.0 °F				
	SUMMER OCC	75.0 °F	UNOCC	75.0 °F				

ZONE NO.	2	FUNCTION:	HANGER BAY SOUTH					
OCCUPANCY HOURS:	M-F	600	TO	*	SAT	*	TO	*
	SUN	*	TO	*				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	60.0 °F				
	SUMMER OCC	75.0 °F	UNOCC	75.0 °F				

ZONE NO.	3	FUNCTION:	OPERATIONS					
OCCUPANCY HOURS:	M-F	0	TO	2400	SAT	0	TO	2400
	SUN	0	TO	2400				
PRESENT TEMP	WINTER OCC	72.0 °F	UNOCC	75.0 °F	CONTINUOUS OPERATION 7 DAYS PER WEEK			
	SUMMER OCC	72.0 °F	UNOCC	75.0 °F				

REMARKS: \* HANGER BAY IS OCCUPIED M-TH 0600-2200 DURING THE WINTER AND  
M-F 0600-0200 (FRIDAY 2 AM) DURING THE SUMMER  
FRIDAY 0600-1800 BOTH WINTER AND SUMMER  
OPEN OCCASIONALLY ON SATURDAY  
OPEN SUNDAY ON DEPLOYMENT

UNIT HEATER AND CABINET HEATER SCHEDULES						HANGER HAS
NO.	ZONE	LOAD	NO.	ZON	LOAD	12 DOOR UNIT HTRS
		(BTU/HR)			(BTU/HR)	HEATING COIL LOA
UH1	3	1300	RUH1	1&2	79915	OF EACH IS
UH2	3	1300	RUH2	1&2	79915	561,600 BTU/HR.
UH3	3	2300	RUH3	1&2	79915	MOTOR POWER IS
UH4	3	1400	RUH4	1&2	79915	3 HP.
UH5	3	3100	RUH5	1&2	79915	CFM OF EACH IS
UH6	3	3100	RUH6	1&2	79915	16500 CFM.
UH7	3	2300	CH1	1&2	11016	
UH8	3	1300	CH2	1&2	11016	
UH9	3	1300	CH3	1&2	11016	

TOTAL EXHAUST FAN POWER: 14.5 HP

FILE: 2060AC3

		PNEUMATIC	X	ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT	70	OCC COOL	70	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	(Y = YES ; N = NO )							
COMMENTS:									



**FILE: 2060AC4**

	PNEUMATIC	X	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT		DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	OCC HEAT		UNOCC HEAT	70 OCC COOL	70 UNOCC COOL	
OTHER SETPOINTS (°F):	HOT DECK		COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	Y	MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)	
	MA CONTROL		ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						

FILE: 2060AC5

	PNEUMATIC	X	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	X	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT		UNOCC HEAT	70 OCC COOL	70 UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK		COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	Y	MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)	
	MA CONTROL		ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N ( Y = YES ; N = NO )					
COMMENTS:	<b>10 KW REHEAT (34,130 BTU)</b>					

FILE: 2060AC6

		PNEUMATIC	X	ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT	70	OCC COOL	70	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	(Y = YES ; N = NO )							
COMMENTS: 10 KW REHEAT (34,130 BTU)									

FILE: **2060ACC5**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC		DDC	COMMENTS
SETPOINTS		CWS (oF)	CWR (oF)	CNWS (oF)		CNWR (oF)	
PANEL INDICATORS							
- PRESSURE		LITE-HI	LITE-LOW	GAUGES			
- TEMPERATURE		LITE-HI	LITE-LOW	GAUGES			
- OTHER							
COMMENTS:							

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: **MNT HANGAR AVUM**

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **2060ACC6****REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC6	CHILLER/COMPRESSOR NO.	RM 213, ADMIN	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC5
	ABSORPTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS		AMPS	PH	HZ
					HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					1 HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME								TIMECLOCK?
PRESENT STOP TIME								
REQUIRED START TIME	1200	1200	1200	1200	1200	1200	1200	
REQUIRED STOP TIME	1900	1900	1900	1900	1900	1900	1900	
MONTHS ON:	J	F	M	A	M	J	J	A
	0	0	0	0	1	1	1	1
								S
								O
								N
								D
								0
								0
								0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		CWS (oF)		CWR (oF)		CNWS (oF)		CNWR (oF)	
PANEL INDICATORS									
- PRESSURE		LITE-HI		LITE-LOW		GAUGES			
- TEMPERATURE		LITE-HI		LITE-LOW		GAUGES			
- OTHER									

COMMENTS:

FILE: 2060B1&2

## SERVES AREA

**USE:**

BB RADIATION ONLY

## MODEL

**42.8 GPH**

**COMMENTS:**

1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 26

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGER AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2060HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1	BOILER/CONVERTER NO.	BOILER ROOM	LOCATION (RM)
B1&B2	SOURCE OF HEATING (PLANT)	AHU'S AND UNIT HTRS	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: HW-40%GLYCOL SOLUTION			% HTG AREA SERVED	
			BB RADIATION ONLY	

**NAMEPLATE:**

		MFG.		MODEL	1552860	CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
		MFG.		MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
1.5	HW PUMP 1 - HP	US ELECTRIC		MFG.	F131	MODEL
	HW PUMP 2 - HP			MFG.		MODEL
	HW PUMP 3 - HP			MFG.		MODEL
COMMENT:						

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME									TIMECLOCK?		
PRESENT STOP TIME											
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

FILE: 2060HV1

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	72	OCC HEAT	72 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	N EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:	243.4 MBH					



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGER AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: **BG**

CHECKED BY:

FILE: 2060MAU1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>MAU1</b>	AHU NO.	<b>HANGAR NORTH</b>	LOCATION (RM)
<b>NONE</b>	REF. SYS. SERVING AHU	<b>BOTH FLOORS OF ADMIN</b>	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER MAKE-UP AIR UNIT			
	COMMENT:	#CCMB12FORGOSC			

**NAMEPLATE:**

<b>TRANE</b>	MFG.	<b>C4654 3A A 0010050</b>	MODEL
<b>3.0</b> SUPPLY FAN HP	MFG.		MODEL
<b>5.0</b> RET/EXH FAN HP	MFG.		MODEL
CFM-HTG	CFM-CLG	MIN %OA	MAX %OA
			% HTG AREA SERVED

COMME 5 HP MOTOR IS CONNECTED TO HEAT RECOVERY UNIT 7 (HRU7). OUTSIDE AIR PASSES THROUGH THE PREHEAT COIL FIRST, THEN THE HEATING COIL. -7F O.A. --> PHC --> 15 F --> HC --> 57 F TO SPACE

**COILS:**

	NONE	STM	<b>X</b>	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b>	HW	ELEC	<b>X</b>	MOD VLV
<b>X</b>	NONE	STM		HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM		HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX		CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							

COMMENTS: 234.0 MBH HEATING COIL

AIR ENTERING THIS UNIT AT -7F IS PREHEATED TO 15F BY PASSING THROUGH A EXHAUST HEAT RECOVERY COIL (HRU)

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: DEC-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2060RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD</b>	PER RAD NO.	<b>MECH ROOM</b>	LOCATION (RM)
<b>B1&amp;B2</b>	SOURCE OF HEATING	ADMIN	SERVES AREA

**UNIT TYPE:**

<input type="checkbox"/>	STEAM	<input checked="" type="checkbox"/>	HW	<input type="checkbox"/>	ELECTRIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	OTHER							
<input type="checkbox"/>	COMMENT:							

**NAMEPLATE:**

1	HW PUMP 1 - HP		MFG.		MODEL
1	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
	HW PUMP 4 - HP		MFG.		MODEL
COMMENT: 21000 BTUH CAP					% AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

<input checked="" type="checkbox"/>	PNEUMATIC	<input type="checkbox"/>	ELECTRIC	<input type="checkbox"/>	ELEC'NIC	<input type="checkbox"/>	DDC	COMMENTS
RADIATION CONTROL:	NONE		2-WAY VLV		3-WAY VLV		OTHER	
SPACE SETPOINT (°F):	OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
RESET CONTROL (°F):	HW HIGH		HW LOW		OA LOW		OA HIGH	
COMMENTS:								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGER AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: **BG**

CHECKED BY:

FILE: 2060RMAU1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>RMAU1</b>	AHU NO.	<b>HANGAR SOUTH</b>	LOCATION (RM)
<b>NONE</b>	REF. SYS. SERVING AHU	<b>HANGAR SOUTH</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER MAKE- UP AIR UNIT			
	COMMENT:				

**NAMEPLATE:**

				MFG.				MODEL	
10.0	SUPPLY FAN HP			MFG.				MODEL	
5	RET/EXH FAN HP			MFG.				MODEL	
9320	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	11.1%	% HTG AREA SERVED

COMME 5 HP MOTOR IS CONNECTED TO HEAT RECOVERY UNIT 7 (HRU7). OUTSIDE AIR PASSES THROUGH THE PREHEAT COIL FIRST, THEN THE HEATING COIL. -7F O.A. --> PHC --> 15 F --> HC --> 57 F TO SPACE

**COILS:**

	NONE		STM	X	HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME									TIMECLOCK?		
PRESENT STOP TIME											
REQUIRED START TIME		0	600	600	600	600	600	0	SEE SCHED.		
REQUIRED STOP TIME		0	2200	2200	2200	2200	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: 234.0 MBH HEATING COIL									
AIR ENTERING THIS UNIT AT -7F IS PREHEATED TO 15F BY PASSING THROUGH A EXHAUST HEAT RECOVERY COIL (HRU									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGER AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 2060RMAU2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

RMAU2	AHU NO.	HANGAR SOUTH	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	HANGAR SOUTH	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER MAKE-UP AIR UNIT			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL
10.0	SUPPLY FAN HP			MFG.					MODEL
5	RET/EXH FAN HP			MFG.					MODEL
9320	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	11.1%	% HTG AREA SERVED

COMME 5 HP MOTOR IS CONNECTED TO HEAT RECOVERY UNIT 7 (HRU7). OUTSIDE AIR PASSES THROUGH THE PREHEAT  
 COIL FIRST, THEN THE HEATING COIL. -7F O.A. -> PHC -> 15 F -> HC -> 57 F TO SPACE

**COILS:**

	NONE		STM	X	HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

OPERATION											
HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	600	600	600	600	600	0	SEE SCHED.			
REQUIRED STOP TIME	0	2200	2200	2200	2200	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							

COMMENTS: 234.0 MBH HEATING COIL

AIR ENTERING THIS UNIT AT -7F IS PREHEATED TO 15F BY PASSING THROUGH A EXHAUST HEAT RECOVERY COIL (HRU)

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGER AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: **BG**

CHECKED BY:

FILE: 2060RMAU3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>RMAU3</b>	AHU NO.	<b>HANGAR SOUTH</b>	LOCATION (RM)
<b>NONE</b>	REF. SYS. SERVING AHU	<b>HANGAR SOUTH</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER MAKE-UP AIR UNIT			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL
10.0	SUPPLY FAN HP			MFG.					MODEL
5	RET/EXH FAN HP			MFG.					MODEL
9320	CFM-HTG	0 CFM-CLG	100%	MIN %OA	100%	MAX %OA	11.1%	% HTG AREA SERVED	

COMME 5 HP MOTOR IS CONNECTED TO HEAT RECOVERY UNIT 7 (HRU7). OUTSIDE AIR PASSES THROUGH THE PREHEAT

COIL FIRST, THEN THE HEATING COIL. -7F O.A. --&gt; PHC --&gt; 15 F --&gt; HC --&gt; 57 F TO SPACE

**COILS:**

	NONE	STM	<b>X</b>	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b>	HW	ELEC	<b>X</b>	MOD VLV HEATING
<b>X</b>	NONE	STM		HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM		HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX		CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME									TIMECLOCK?				
PRESENT STOP TIME													
REQUIRED START TIME		0	600	600	600	600	600	0	SEE SCHED.				
REQUIRED STOP TIME		0	2200	2200	2200	2200	1800	0					
MONTHS ON:													
J	F	M	A	M	J	J	A	S	O	N	D		
1	1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	234.0 MBH HEATING COIL								
AIR ENTERING THIS UNIT AT -7F IS PREHEATED TO 15F BY PASSING THROUGH A EXHAUST HEAT RECOVERY COIL (HRU									



FILE: 2060RMAU6

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	70	OCC HEAT	65 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:	<b>234.0 MBH HEATING COIL</b>					
	<b>AIR ENTERING THIS UNIT AT -7F IS PREHEATED TO 15F BY PASSING THROUGH A EXHAUST HEAT RECOVERY COIL (HRU</b>					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2072ACC8

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC8	CHILLER/COMPRESSOR NO.	RM 207, ADMIN	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC8
	ABSORPTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
CHW	X	DX	OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
VOLTS		AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	1 HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS						
- PRESSURE		LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE		LITE-HI	LITE-LOW	GAUGES		
- OTHER						

COMMENTS:



FILE: **2060RMAU4**

AIR ENTERING THIS UNIT AT -7F IS PREHEATED TO 15F BY PASSING THROUGH A EXHAUST HEAT RECOVERY COIL (HRU

**FIELD SURVEY NOTES**

BUILDING 2065

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AF OPS BLDG

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2065AC1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AC1	AHU NO.	SWITCH NODE	LOCATION (RM)
ACC1	REF. SYS. SERVING AHU	SWITCH NODE	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

					MFG.					MODEL
1.0	SUPPLY FAN HP				MFG.					MODEL
0.0	RET/EXH FAN HP				MFG.					MODEL
	CFM-HTG	1000	CFM-CLG	100%	MIN % OA	100%	MAX %OA		% HTG AREA SERVED	
COMMENT: 21.6 MBH COOLING COIL CAPACITY										
17.44 MBH REHEATING COIL CAPACITY (5.0 KW)										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
X	NONE		STM		HW		ELEC		MOD VLV	HEATING
	NONE		STM		HW	X	ELEC		MOD VLV	REHEAT
	NONE		STM		HW	X	EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
0	0	0	0	1	1	1	1	1	0	0	0	0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 2065AC1G

COMMENTS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AF OPS BLDG

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2065AC2G

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AC2G	AHU NO.	GENERATOR BLDG	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	GENERATOR BLDG/RADIO RO	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL	
1.0	SUPPLY FAN HP				MFG.					MODEL
0.0	RET/EXH FAN HP				MFG.					MODEL
	CFM-HTG	880	CFM-CLG	100%	MIN % OA	100%	MAX %OA		% HTG AREA SERVED	
COMMENT:		22.5 MBH COOLING COIL CAPACITY								
		5KW REHEATING COIL CAPACITY								

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
X	NONE		STM		HW		ELEC		MOD VLV	HEATING
	NONE		STM		HW	X	ELEC		MOD VLV	REHEAT
	NONE		STM		HW	X	EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW			X	MOD VLV	COOLING

**OPERATION:**

OVERVIEW												
HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
0	0	0	0	1	1	1	1	1	0	0	0	0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT	75	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

## FILE: 2065AC2

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		(Y = YES ; N = NO )							
COMMENTS:									

**FILE: 2065AC4**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):		OCC HEAT	UNOCC HEAT	74 OCC COOL	N/A	UNOCC COOL
OTHER SETPOINTS (°F):		HOT DECK	COLD DECK	MIXED AIR		OTHER
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	Y	EA (Y/N)
		MA CONTROL	ECONO-DB	ECONO-ENT		OTHER
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						

FILE: **2065AC4A**

**SERVES AREA**

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**FILE: 2065AC5**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	(Y = YES ; N = NO )							
COMMENTS:									

FILE: **2065AC6**

**WEATHER CTR. 143** | **SERVES AREA**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 2065AC7

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 2065AC8**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AF OPS BLDG

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2065AC9

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AC9	AHU NO.	TOWER CAB 205	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	TOWER CAB 205	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

					MFG.					MODEL	
2.0	SUPPLY FAN HP				MFG.					MODEL	
0.0	RET/EXH FAN HP				MFG.					MODEL	
	CFM-HTG	2415	CFM-CLG	100%	MIN % OA	100%	MAX %OA		% HTG AREA SERVED		
COMMENT: 64.3 MBH COOLING COIL CAPACITY											
89.63 MBH REHEATING COIL CAPACITY (HOT WATER REHEAT)											

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
X	NONE		STM		HW		ELEC		MOD VLV	HEATING
	NONE		STM	X	HW		ELEC	X	MOD VLV	REHEAT
	NONE		STM		HW	X	EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT	78	OCC COOL	N/A	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**2065ACC1**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS						
- PRESSURE		LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE		LITE-HI	LITE-LOW	GAUGES		
- OTHER						
COMMENTS:	21.6 MBH CAPACITY					

**2065ACC2**

## LOCATION (RM)

## OTHER

## COMMENTS:

## 0

## - OTHER

## 21.6 MBH CAPACITY





**2065ACC6**

## LOCATION (RM)

## OTHER

**0.75 HP**

## 0

### 35 MBH CAPACITY



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: **AF OPS BLDG**

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **2065ACC4A****REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC4A	CHILLER/COMPRESSOR NO.	OUTSIDE MECH ROO	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC4A
	ABSORPTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS		AMPS	PH	HZ
					HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					0.75 HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME								TIMECLOCK?
PRESENT STOP TIME								
REQUIRED START TIME								
REQUIRED STOP TIME								
MONTHS ON:	J	F	M	A	M	J	J	A
	0	0	0	0	1	1	1	1
								S
								O
								N
								D
								0
								0
								0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		CWS (oF)		CWR (oF)		CNWS (oF)		CNWR (oF)	
PANEL INDICATORS									
- PRESSURE		LITE-HI		LITE-LOW		GAUGES			
- TEMPERATURE		LITE-HI		LITE-LOW		GAUGES			
- OTHER									

COMMENTS: 21.6 MBH CAPACITY

FILE: **2065B1&2**

## SERVES AREA

## BB RADIATION ONLY

## MODEL

## 1

COMMENTS:

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PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY

EMC NO.: 1406-006  
 DATE: 14-NOV-94  
 PREPARED BY: CSW  
 CHECKED BY: BG  
 FILE: 2065DHW

BLDG: AF OPS BLDG

DOMESTIC HW SURVEY OBSERVATIONS			
DHW	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
NONE	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

UNIT TYPE:							
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC
	STM/HW		HTHW/HW		HTHW/STM		OTHER
							FUELS:
							CONVERTER TYPE:
COMMENT:							

NAMEPLATE:					
AO SMITH	MFG.	COF-200-800	MODEL	800000	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)
DOMESTIC HW CIRCULATION PUMP:					
0.0833	HW PUMP 1 - HP	B&G	MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON

OPERATION:										
HOURS ON:	S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME	0	0	0	0	0	0	0			
REQUIRED STOP TIME	2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:										
J	F	M	A	M	J	J	A	S	O	N
1	1	1	1	1	1	1	1	1	1	1

CONTROLS:							
	1 PNEUMATIC		ELECTRIC		ELEC'NIC		DDC
SETPOINTS			HW SUPPLY				
COMMENTS:							

**FILE: 2065HV1**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	N/A	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 2065HV2**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	N/A	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 2065HV3**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									



**FILE: 2065HV4**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT:		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	N/A	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: AF OPS BLDG

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2065HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
B1&2	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: HW-40% GLYCOL SOLN				% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

MFG.	MODEL	1098400	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
5 HW PUMP 1 - HP	BALDOR	MFG.	M32187
HW PUMP 2 - HP		MFG.	
HW PUMP 3 - HP		MFG.	
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	
REQUIRED START TIME	0	0	0	0	0	0	0	
REQUIRED STOP TIME	2400	2400	2400	2400	2400	2400	2400	
MONTHS ON:								
J	F	M	A	M	J	J	A	S
1	1	1	1	0	0	0	0	0

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AF OPS BLDG

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2065HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
B1&2	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: HW-40% GLYCOL SOLN				% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

MFG.	MODEL	1098400	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
5 HW PUMP 1 - HP	BALDOR	MFG.	M32187
HW PUMP 2 - HP		MFG.	
HW PUMP 3 - HP		MFG.	
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	
REQUIRED START TIME	0	0	0	0	0	0	0	
REQUIRED STOP TIME	2400	2400	2400	2400	2400	2400	2400	
MONTHS ON:								
J	F	M	A	M	J	J	A	S
1	1	1	1	0	0	0	0	0

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FILE: 2065MU1**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	60	OCC HEAT	60	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 2065MU2**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	60	OCC HEAT	60 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AF OPS BLDG

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2065RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD</b>	PER RAD NO.	<b>MECH ROOM</b>	LOCATION (RM)
	SOURCE OF HEATING	FINISHED AREAS	SERVES AREA

**UNIT TYPE:**

<input type="checkbox"/>	STEAM	<input checked="" type="checkbox"/>	HW	<input type="checkbox"/>	ELECTRIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	OTHER							
COMMENT: 623 BTUH/FT								

**NAMEPLATE:**

<input type="checkbox"/>	HW PUMP 1 - HP	<input type="checkbox"/>	MFG.	<input type="checkbox"/>	MODEL
<input type="checkbox"/>	HW PUMP 2 - HP	<input type="checkbox"/>	MFG.	<input type="checkbox"/>	MODEL
<input type="checkbox"/>	HW PUMP 3 - HP	<input type="checkbox"/>	MFG.	<input type="checkbox"/>	MODEL
<input type="checkbox"/>	HW PUMP 4 - HP	<input type="checkbox"/>	MFG.	<input type="checkbox"/>	MODEL
COMMENT: 7 GPM 200F EWT 180F LWT					% AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	

**CONTROLS:**

<input type="checkbox"/>	X	PNEUMATIC	<input type="checkbox"/>	ELECTRIC	<input type="checkbox"/>	ELEC'NIC	<input type="checkbox"/>	DDC	COMMENTS
RADIATION CONTROL:		NONE		2-WAY VLV		3-WAY VLV		OTHER	
SPACE SETPOINT (øF):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
RESET CONTROL (øF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
COMMENTS:									

**FIELD SURVEY NOTES**

BUILDING 2070

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGER AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 2070 BLDG NAME: MNT HANGAR AVUM, AVIM HANGAR (PN68)

ZONE NO.	1 - 3	FUNCTION: HANGAR						
OCCUPANCY HOURS:	M-F	700	TO	1800	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F		UNOCC	65.0 °F			
	SUMMER OCC	°F		UNOCC	°F			

ZONE NO.		4 - 5		FUNCTION: OPERATIONS					
OCCUPANCY HOURS:		M-F	700	TO	1800	SAT	0	TO	0
		SUN	0	TO	0				
PRESENT TEMP	WINTER OCC		72.0 °F		UNOCC	65.0 °F			
	SUMMER OCC		°F		UNOCC	°F			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC	øF			
	SUMMER OCC		øF		UNOCC	øF			

REMARKS:	REVOLVING UNIT HEATER SCHEDULE			DOOR UNIT HEATER SCHEDULE		
	NO.	HP	BTU/HR	NO	HP	BTU/HR
	RUH1	1/4	31542	DUH1-16	3	561,600
	RUH2	1/4	68150	DUH17	1/25	10000
	RUH3	1/4	62551	DUH18	1/25	10000
	RUH4	1/6	55965			
	RUH5	1/6	55965	HW UNIT HEATERS IN HANGAR		
	RUH6	1/6	55965	TOTAL HP: 1.62		
	RUH7	1/4	64450	TOTAL BTU/HR: 303686		
	RUH8	1/4	32082			
				HW UNIT HEATER IN MECH RM:		
	CABINET HEATER SCHEDULE			1/20 HP, 8000 BTU/HR		
CH1	1/60	11016				
CH2	1/60	11016	TOTAL EXHAUST FAN POWER: 21 HP			
CH3	1/60	11016				
CH4	1/60	11016	HUMIDIFIER TOTAL POWER: 300 WATTS			
CH5	1/60	11016				



FILE: 2070AC1

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	80	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	(Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **2070AC2****AIR HANDLING UNIT SURVEY OBSERVATIONS**

AC2	AHU NO.	ALSE 134	LOCATION (RM)
ACC2	REF. SYS. SERVING AHU	ADMIN NORTH	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT		REHEAT		INDUCTION		VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:	37.3 MBH CAPACITY COOLING COIL				18.26 MBH REHEAT			

**NAMEPLATE:**

				MFG.					MODEL	
1.0	SUPPLY FAN HP				MFG.					MODEL
0.0	RET/EXH FAN HP				MFG.					MODEL
0	CFM-HTG	1470	CFM-CLG	100%	MIN %OA	100%	MAX %OA		% HTG AREA SERVED	

COMMENT:

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
X	NONE	STM	HW	ELEC	MOD VLV	HEATING
	NONE	STM	X HW	ELEC	X MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	X DX	CW		X MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT	74	OCC COOL	80	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							

COMMENTS:





FILE: 2070B1&2

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

FILE: 2070DHW

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS			HW SUPPLY			
COMMENTS:						

**FILE: 2070HV1**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	72	OCC HEAT	65 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	Y EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						

FILE: 2070HV2

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									



FILE: 2070HV3

14x8' RAR (ZONE 5)	SERVES AREA
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	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	55	OCC HEAT	55	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1	BOILER/CONVERTER NO.	BOILER ROOM	LOCATION (RM)
B1&2	SOURCE OF HEATING (PLANT)	AHUS	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: HW-40%GLYCOL SOLUTION			% HTG AREA SERVED	
			BB RADIATION ONLY	

**NAMEPLATE:**

MFG.	MODEL	1975886	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
7.5 HW PUMP 1 - HP	MFG.		MODEL
HW PUMP 2 - HP	MFG.		MODEL
HW PUMP 3 - HP	MFG.		MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FILE: 2070MA1**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	<b>OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.</b>								
	<b>-7F OA --&gt;PHC--&gt;15F --&gt;HC--&gt;57F TO SPACE</b>								
	<b>LOAD OF HEATING COIL: 669 MBH .</b>								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070MA2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

MAU2	AHU NO.	ZONE 5-ADMIN	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	ZONE 5-ADMIN	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	X	OTHER		
	COMMENT:	MAKE-UP AIR HANDLING UNIT			

**NAMEPLATE:**

				MFG.					MODEL
10.0	SUPPLY FAN HP			MFG.					MODEL
5.0	RET/EXH FAN HP			MFG.					MODEL
13945	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	10.0%	% HTG AREA SERVED
COMMENT:									

**COILS:**

	NONE		STM	X	HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.								
	-7F OA -->PHC-->15F -->HC-->57F TO SPACE								
	LOAD OF HEATING COIL: 633 MBH								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: DEC-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD1</b>	PER RAD NO.	<b>BOILER ROOM</b>	LOCATION (RM)
<b>B1&amp;2</b>	SOURCE OF HEATING	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC				
OTHER							
COMMENT:							

**NAMEPLATE:**

0.75	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
	HW PUMP 4 - HP		MFG.		MODEL
COMMENT:					% AREA HEATING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME									TIMECLOCK?		
PRESENT STOP TIME											
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:		NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:		15 BTUH CAPACITY				

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070RMA1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

RMAU1	AHU NO.	HANGAR	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	HANGAR	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	X	OTHER		
COMMENT:	MAKE-UP AIR HANDLING UNIT				

**NAMEPLATE:**

				MFG.					MODEL
10.0	SUPPLY FAN HP			MFG.					MODEL
5.0	RET/EXH FAN HP			MFG.					MODEL
10395	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	7.5%	% HTG AREA SERVED
COMMENT:									

**COILS:**

	NONE	STM	X	HW	ELEC		MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X	MOD VLV	HEATING
X	NONE	STM		HW	ELEC		MOD VLV	REHEAT
X	NONE	STM		HW	EVAP MEDIA		MOD VLV	HUMID.
X	NONE	DX		CW			MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.								
	-7F OA -->PHC-->15F -->HC-->57F TO SPACE								
	LOAD OF HEATING COIL: 472 MBH								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070RMA2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

RMAU2	AHU NO.	HANGAR	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	HANGAR	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	X	OTHER		
	COMMENT:	MAKE-UP AIR HANDLING UNIT			

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
5.0	RET/EXH FAN HP				MFG.					MODEL
10080	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	7.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

	NONE	STM	X	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X	MOD VLV HEATING
X	NONE	STM		HW	ELEC	MOD VLV	REHEAT
X	NONE	STM		HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX		CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.									
-7F OA -->PHC-->15F -->HC-->57F TO SPACE									
LOAD OF HEATING COIL: 457 MBH									

**FILE: 2070RMA3**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	X	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	70 OCC HEAT	65 UNOCC HEAT	OCC COOL	UNOCC COOL		
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER		
DAMPER CONTROL:	Y MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)		
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER		
DEMAND LIMIT:	N ( Y = YES ; N = NO )					
COMMENTS:	<b>OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.</b>					
	<b>-7F OA --&gt;PHC--&gt;15F --&gt;HC--&gt;57F TO SPACE</b>					
	<b>LOAD OF HEATING COIL: 457 MBH</b>					



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **2070RMA4****AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>RMAU4</b>	AHU NO.	<b>HANGAR</b>	LOCATION (RM)
<b>NONE</b>	REF. SYS. SERVING AHU	<b>HANGAR</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	<b>X</b>	OTHER		
	COMMENT:	<b>MAKE-UP AIR HANDLING UNIT</b>			

**NAMEPLATE:**

				MFG.					MODEL
10.0	SUPPLY FAN HP			MFG.					MODEL
5.0	RET/EXH FAN HP			MFG.					MODEL
10080	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	7.5%	% HTG AREA SERVED
COMMENT:									

**COILS:**

	NONE		STM	X	HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.									
-7F OA -->PHC-->15F -->HC-->57F TO SPACE									
LOAD OF HEATING COIL: 457 MBH									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070RMA5

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

RMAU5	AHU NO.	HANGAR	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	HANGAR	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	X	OTHER		
	COMMENT:	MAKE-UP AIR HANDLING UNIT			

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
5.0	RET/EXH FAN HP				MFG.					MODEL
10080	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	7.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

	NONE		STM	X	HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.									
-7F OA -->PHC-->15F -->HC-->57F TO SPACE									
LOAD OF HEATING COIL: 457 MBH									



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2070RMA7

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

RMAU7	AHU NO.	HANGAR	LOCATION (RM)
NONE	REF. SYS. SERVING AHU	HANGAR	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	X	OTHER		
COMMENT:	MAKE-UP AIR HANDLING UNIT				

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
5.0	RET/EXH FAN HP				MFG.					MODEL
10080	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	7.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

	NONE		STM	X	HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME									TIMECLOCK?			
PRESENT STOP TIME												
REQUIRED START TIME		0	700	700	700	700	700	0				
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0				
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.								
	-7F OA -->PHC-->15F -->HC-->57F TO SPACE								
	LOAD OF HEATING COIL: 457 MBH								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MNT HANGAR AVUM

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **2070RMA8****AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>RMAU8</b>	AHU NO.	<b>HANGAR</b>	LOCATION (RM)
<b>NONE</b>	REF. SYS. SERVING AHU	<b>HANGAR</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	<b>X</b>	OTHER		
	COMMENT:	<b>MAKE-UP AIR HANDLING UNIT</b>			

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
5.0	RET/EXH FAN HP				MFG.					MODEL
10080	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	7.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

	NONE	STM	X	HW	ELEC		MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X	MOD VLV	HEATING
X	NONE	STM		HW	ELEC		MOD VLV	REHEAT
X	NONE	STM		HW	EVAP MEDIA		MOD VLV	HUMID.
X	NONE	DX		CW			MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME									TIMECLOCK?		
PRESENT STOP TIME											
REQUIRED START TIME		0	700	700	700	700	700	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: OUTSIDE AIR ENTERING MAU1 IS PREHEATED WITH A EXHAUST HEAT RECOVERY COIL FROM HRU-9.									
-7F OA -->PHC-->15F -->HC-->57F TO SPACE									
LOAD OF HEATING COIL: 457 MBH									

**FIELD SURVEY NOTES**

BUILDING 2792

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AMMO INSPECTION

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2792BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 2792 BLDG NAME: AMMO INSPECTION

ZONE NO.	1		FUNCTION:						
OCCUPANCY HOURS:	M-F	730	TO	1600	SAT	0	TO	0	
	SUN	0	TO	0					
PRESENT TEMP	WINTER OCC	70.0 øF		UNOCC	70.0 øF				
	SUMMER OCC	70.0 øF		UNOCC	70.0 øF				

ZONE NO.		2	FUNCTION: MECH ROOM						
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		50.0 øF		UNOCC		øF		
	SUMMER OCC		50.0 øF		UNOCC		øF		

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC	øF			
	SUMMER OCC		øF		UNOCC	øF			

REMARKS: KEEP PNEUMATIC CONTROL AS IS.**UNIT HEATER SCHEDULE**

NO.	LOCATION	WATER MBH	40% GLY. MBH
UH1,2,3,4	INSPECT.BAYS	69.8	59.1
UH5	VESTIBULE	27.4	23.2
UH6	MECH. ROOM	27.4	23.2
UH7	PUMP ROOM	-	-
UH8	RESTROOM	8.3	7

5.0 KW ELECTRIC

**EXHAUST FANS 3 HP TOTAL**

FILE: 2792AHU1

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	X	SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	70	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									





PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: AMMO INSPECTION

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 2792DHW

**DOMESTIC HW SURVEY OBSERVATIONS**

<b>DHW</b>	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
<b>NONE</b>	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

NO.2 OIL	NO.6 OIL	N.GAS	X	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM		OTHER	CONVERTER TYPE:

COMMENT:

**NAMEPLATE:**

<b>BRADFORD-WHITE</b>	MFG.	<b>M-I-30R5SS-9</b>	MODEL	<b>3.8</b>	CAPACITY OUTPUT (BTUH,KW)
				KW	
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	730	730	730	730	730	0				
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 4230

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4230

EMC NO.: 1406-006

DATE: 11/17/94

PREPARED BY: BG

CHECKED BY:

FILE: FD4230

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4230 BLDG NAME: MINI MALL

ZONE NO.	1	FUNCTION:	RETAIL
OCCUPANCY HOURS:	M-F	0 TO 2400	SAT 0 TO 2400
	SUN	0 TO 2400	
PRESENT TEMP	WINTER OCC	72.0 °F	UNOCC 72.0 °F
	SUMMER OCC	°F	UNOCC °F

ZONE NO.	2	FUNCTION:	
OCCUPANCY HOURS:	M-F	0 TO 2400	SAT 0 TO 2400
	SUN	0 TO 2400	
PRESENT TEMP	WINTER OCC	72.0 °F	UNOCC 72.0 °F
	SUMMER OCC	°F	UNOCC °F

ZONE NO.		FUNCTION:	
OCCUPANCY HOURS:	M-F	TO	SAT TO
	SUN	TO	
PRESENT TEMP	WINTER OCC	°F	UNOCC °F
	SUMMER OCC	°F	UNOCC °F

REMARKS: WALK IN REFRIGERATOR AND FREEZER. GAS CLOTHES DRYERS AND WASHERS.

ADDITIONAL LOADS

2.8 HP OF MISC. FANS

DDC CONTROLS



FILE: 4230AH1

	PNEUMATIC	ELECTRIC	ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	X DUAL SETPNT	SETBACK			
SPACE SETPOINT (°F):	72 OCC HEAT	72 UNOCC HEAT	72 OCC COOL	72 UNOCC COOL		
OTHER SETPOINTS (°F):	HOT DECK	55 COLD DECK	55 MIXED AIR		OTHER	
DAMPER CONTROL:	Y MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	Y EA (Y/N)		RELIEF AIR
	MA CONTROL	Y ECONO-DB	ECONO-ENT		OTHER	ACTUATOR
DEMAND LIMIT:	N ( Y = YES ; N = NO )					
COMMENTS:						

FILE: 4230AH2

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	RELIEF AIR
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	ACTUATOR
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

<b>E M C ENGINEERS, INC.</b>				EMC NO.: 1406-006			
PROJECT: UMCS STUDY				DATE: 11/17/94			
CLIENT CONTRACT NO.: DACA01-94-D-0033				PREPARED BY: BG			
CLIENT PROJ. ENG: STEVE ROWLEY				CHECKED BY:			
LOCATION: FORT DRUM, NY		BLDG: 4230 MINI MALL		FILE: 4230AC1			

REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS							
ACCU-1	CHILLER/COMPRESSOR NO.	OUTSIDE	LOCATION (RM)				

UNIT TYPE:							
CENTRIFUGAL WITH WATER SIDE COOLING TOWER				OTHER			
RECIPROCATING WITH WATER SIDE COOLING TOWER				AHU'S SERVED			
RECIPROCATING WITH AIR COOLED CONDENSING UNIT				AH-1			
ABSORPTION WITH WATER SIDE COOLING TOWER							
X	AIR COOLED CONDENSING UNIT						
CHW	X	DX	OTHER				

NAMEPLATE:							
CHILLER	TRANE	MFG.	39E11	MODEL	SERIAL NO.		
	VOLTS	AMPS	PH	HZ	20	CAPACITY (TONS)	
TOWER	MFG.	MODEL	# OF FANS				
	VOLTS	AMPS	PH	HZ	HP each		
CW PUMP	MFG.	MODEL	SERIAL NO.				
	VOLTS	AMPS	PH	HZ	HP		
CNW PUMP	MFG.	MODEL	SERIAL NO.				
	VOLTS	AMPS	PH	HZ	HP		
COMMENTS:							

OPERATION:											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

CONTROLS:							
	PNEUMATIC	ELECTRIC	ELEC'NIC	X	DDC	COMMENTS	
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)		CNWR (oF)		
PANEL INDICATORS							
- PRESSURE	LITE-HI	LITE-LOW	GAUGES				
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES				
- OTHER							
COMMENTS:							



<b>E M C ENGINEERS, INC.</b>				EMC NO.: 1406-006			
PROJECT: UMCS STUDY				DATE: 11/17/94			
CLIENT CONTRACT NO.: DACA01-94-D-0033				PREPARED BY: <b>BG</b>			
CLIENT PROJ. ENG: STEVE ROWLEY				CHECKED BY:			
LOCATION: FORT DRUM, NY		BLDG: <b>4230 MINI MALL</b>		FILE: <b>4230AC2</b>			

REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS							
ACCU-1	CHILLER/COMPRESSOR NO.			OUTSIDE		LOCATION (RM)	

UNIT TYPE:			
	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AH-2
	ABSORPTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

NAMEPLATE:							
CHILLER	TRANE	MFG.	39E08	MODEL	SERIAL NO.		
	VOLTS		AMPS	PH	HZ	10	CAPACITY (TONS)
TOWER		MFG.		MODEL	# OF FANS		
	VOLTS		AMPS	PH	HZ		HP each
CW PUMP		MFG.		MODEL	SERIAL NO.		
	VOLTS		AMPS	PH	HZ		HP
CNW PUMP		MFG.		MODEL	SERIAL NO.		
	VOLTS		AMPS	PH	HZ		HP
COMMENTS:							

OPERATION:									
HOURS ON:	S	M	T	W	T	F	S	COMMENT	
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?	
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400		
REQUIRED START TIME									
REQUIRED STOP TIME									
MONTHS ON:	J	F	M	A	M	J	J	A	S
	1	1	1	1	1	1	1	1	1

CONTROLS:							
		PNEUMATIC	ELECTRIC	ELEC'NIC	X	DDC	COMMENTS
SETPOINTS		CWS (oF)	CWR (oF)	CNWS (oF)		CNWR (oF)	
PANEL INDICATORS							
- PRESSURE		LITE-HI	LITE-LOW			GAUGES	
- TEMPERATURE		LITE-HI	LITE-LOW			GAUGES	
- OTHER							
COMMENTS:							

**FIELD SURVEY NOTES**

BUILDING 4305

TYPICAL: 10050

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4305

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4305BDO

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4305 BLDG NAME: FITNESS CENTER

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F	645	TO	2000	SAT	0	TO	0		
	SUN	0	TO	0						
PRESENT TEMP	WINTER OCC	75.0	øF	UNOCC	65.0	øF				
	SUMMER OCC		øF	UNOCC		øF				

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F		TO		SAT		TO			
	SUN		TO							
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF				
	SUMMER OCC		øF	UNOCC		øF				

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F		TO		SAT		TO			
	SUN		TO							
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF				
	SUMMER OCC		øF	UNOCC		øF				

REMARKS: POOL: 81-82 F (WATER TEMPERATURE)

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG:

**4305**

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **4305DW1&2****DOMESTIC HW SURVEY OBSERVATIONS**

<b>DHW1&amp;2</b>	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

NO.2 OIL		NO.6 OIL	<b>X</b>	N.GAS		ELEC		FUELS:
STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:

COMMENT:

**NAMEPLATE:**

MFG.	<b>S4G250A-PG SER#18657163</b>	MODEL	<b>540000</b>	CAPACITY OUTPUT (BTUH,KW)
MFG.		MODEL	<b>540000</b>	CAPACITY OUTPUT (BTUH,KW)
DOMESTIC HW CIRCULATION PUMP:				
<b>0.0833</b>	HW PUMP 1 - HP	<b>B&amp;G</b>	MFG.	MODEL
	HW PUMP 2 - HP		MFG.	MODEL
	HW PUMP 3 - HP		MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	NO			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					



FILE: **4305HV2A**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
	Y	MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:	THERE IS A DEHUMIDIFICATION UNIT ASSOCIATED WITH THIS UNIT.								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4305

EMC NO.: 1406-006

DATE: 22-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4305HV2B

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>HV2B</b>	AHU NO.	<b>FAN FOOM</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>POOL AREA-OVERHEAD AIR S</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
3.0	SUPPLY FAN HP				MFG.					MODEL
3.0	RET/EXH FAN HP				MFG.					MODEL
10840	CFM-HTG		CFM-CLG	0% MIN %OA	100%	MAX %OA	15.9%	% HTG AREA SERVED		
COMMENT:										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	HW	ELEC	<b>X</b>	MOD VLV HEATING
<b>X</b>	NONE	STM	HW	ELEC		MOD VLV REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA		MOD VLV HUMID.
<b>X</b>	NONE	DX	CW			MOD VLV COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 4305HV3

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4305

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4305RAD1

**PERIMETER RADIATION SURVEY OBSERVATIONS**

RAD1	PER RAD NO.	LOCATION (RM)
	SOURCE OF HEATING	WHOLE BLDG EXCEPT POOL SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC
OTHER			
COMMENT:			

**NAMEPLATE:**

2	HW PUMP 1 - HP	MFG.	MODEL
	HW PUMP 2 - HP	MFG.	MODEL
	HW PUMP 3 - HP	MFG.	MODEL
	HW PUMP 4 - HP	MFG.	MODEL
COMMENT:		60.0%	% AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	0	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4305

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4305RAD2

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD2</b>	PER RAD NO.		LOCATION (RM)
	SOURCE OF HEATING	<b>POOL AREA</b>	SERVES AREA

**UNIT TYPE:**

	STEAM	X	HW		ELECTRIC			
	OTHER							
	COMMENT:							

**NAMEPLATE:**

2	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
	HW PUMP 4 - HP		MFG.		MODEL
COMMENT:					40.0% % AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	0	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: **4305**

EMC NO.: 1406-006

DATE: 16-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **4305B1&2****BOILER & CONVERTER SURVEY OBSERVATIONS**

<b>B1&amp;2</b>	BOILER/CONVERTER NO.	BOILER ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG	X	HW		TEMP.		BOILER TYPE:
X	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							60%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

<b>WELL-MCLAIN</b>	MFG.		MODEL	<b>1632000</b>	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
<b>WELL-MCLAIN</b>	MFG.		MODEL	<b>1632000</b>	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
<b>2</b>	HW PUMP 1 - HP	<b>LINCOLN</b>	MFG.		MODEL
<b>2</b>	HW PUMP 2 - HP	<b>MARATHON</b>	MFG.		MODEL
<b>4</b>	HW PUMP 3 - HP	<b>MARATHON</b>	MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 4330

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4330

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4330BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4330

BLDG NAME: RECREATION CENTER

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F	700	TO	2100	SAT	700	TO	1700
		SUN	700	TO	1700				
PRESENT TEMP	WINTER OCC	øF			UNOCC	øF			
	SUMMER OCC	øF			UNOCC	øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC		øF		
	SUMMER OCC		øF		UNOCC		øF		

ZONE NO.		FUNCTION:						
OCCUPANCY HOURS:		M-F		TO		SAT		TO
		SUN		TO				
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF			
	SUMMER OCC	øF		UNOCC	øF			

REMARKS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 4330

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4330B1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

B1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG	X	HW		TEMP.		BOILER TYPE:
X	NO.2 OIL		NO.6 OIL	X	N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMME OIL IS A BACKUP FOR NAT. GAS SYSTEM							100%	% HTG AREA SERVED	
							18%	BB RADIATION ONLY	

**NAMEPLATE:**

BURNHAM	MFG.	PF506	MODEL	950000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
2	HW PUMP 1 - HP	EMERSON	MFG.		MODEL
2	HW PUMP 2 - HP	EMERSON	MFG.	P63CZY-3339	MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	700	700	700	700	700	700	700				
REQUIRED STOP TIME	1700	2100	2100	2100	2100	2100	1700				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 4330

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 4330DHW1

**DOMESTIC HW SURVEY OBSERVATIONS**

<b>DHW-1</b>	BOILER/CONVERTER NO.	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	SERVES AREA

**UNIT TYPE:**

NO.2 OIL	NO.6 OIL	X	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW		HTHW/STM	OTHER	CONVERTER TYPE:

COMMENT:

**NAMEPLATE:**

AO SMITH	MFG.	EC65914	MODEL	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL	CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG:

**4330**

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: **BG**

CHECKED BY:

FILE: **4330FCU1****AIR HANDLING UNIT SURVEY OBSERVATIONS**

FCU1	AHU NO.	MER	LOCATION (RM)
	REF. SYS. SERVING AHU	BLDG VENTILATION	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR	X	H&V
	MULTIZONE		DOUBLE DT		REHEAT		INDUCTION		VAV
	NUMBER OF ZONES			OTHER					
	COMMENT: FAN AND COIL UNIT								

**NAMEPLATE:**

			MFG.						MODEL	
20.0	SUPPLY FAN HP		MFG.						MODEL	
10.0	RET/EXH FAN HP		MFG.			80%			MODEL	
19145	CFM-HTG		CFM-CLG	0%	MIN %OA	100%	MAX %OA	<del>100.0%</del>	% HTG AREA SERVED	
COMMENT: 1 1/2										

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	0	0	0	0	0	1	1	1	

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	N EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				
COMMENTS:					



FILE: 4330RAD

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
RADIATION CONTROL:		NONE		2-WAY VLV		3-WAY VLV		OTHER	
SPACE SETPOINT (øF):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
RESET CONTROL (øF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
COMMENTS:									

**FIELD SURVEY NOTES**

BUILDING 4530

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530BDS1

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4530

BLDG NAME: SMA

ZONE NO.	A	FUNCTION:	ADMIN&MGT					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	72.0 °F	UNOCC	65.0 °F	INCREASED OPERATION DURING DEPLOYMENT			
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	B	FUNCTION:	MAJOR COMPONENTS					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	65.0 °F				
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	C	FUNCTION:	SHOP SUPPLY					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	65.0 °F				
	SUMMER OCC	°F	UNOCC	°F				

REMARKS: HOURS SUBJECT TO CHANGE DURING DEPLOYMENT. DURING SUMMER OPERATION IS 10 HOURS PER DAY, 5 DAYS PER WEEK.  
15 HRS RUN TIME IN VEH EXH. RM.

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530BDS2

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4530

BLDG NAME: SMA

ZONE NO.	D		FUNCTION:		TOOL ROOM, Q.A. ADMIN, COMM./ELECTRONICS				
OCCUPANCY HOURS:		M-F	730	TO	1630	SAT	0	TO	0
		SUN	0	TO	0	TEMP MUST BE MAINTAINED			
PRESENT TEMP	WINTER OCC		65.0 øF		UNOCC	65.0 øF		AT 65 F +- 5 F OCCUPIED AND	
	SUMMER OCC		65.0 øF		UNOCC	65.0 øF		UNOCCUPIED TO PROTECT TEST EQUIPMENT.	

ZONE NO.	E	FUNCTION:	CNAVAS, BATTERY MAINTENANCE AND CHARGING					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	65.0 °F				
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	F	FUNCTION:	FURNATURE, ARTILLERY, RADIATOR, MACHINE SHOP					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	65.0 °F				
	SUMMER OCC	°F	UNOCC	°F				

REMARKS: 8 SPACE HEATERS.

BATTERY CHARGING ROOM: BATTERY CHARGERS RUN CONTINUOUSLY AS DO THE ASSOCIATED EXHAUST FANS.

SEPERATE AIR HANDLING SYSTEM FOR ROOM 171.

ROOM 163 HAS AC.

AREA 'D' ELECTRIC REHEAT COIL, SERVES AC 3, 25.0 MBH CAPACITY

AREA 'F', SMALL ARMS, DEHUMIDIFIER, 3/4 HP MOTOR

AREA 'F' MER II ERC 1 &amp; 2, SERVERS AC1&amp;2, 51.0 MBH CAPACITY

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530BDS2

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4530

BLDG NAME: SMA

ZONE NO.	G	FUNCTION:	WHEELED VEHICLE, SPECIAL PURPOSE EQUIPMENT					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F		UNOCC	65.0 °F			
	SUMMER OCC	°F		UNOCC	°F			

ZONE NO.	H	FUNCTION:	WHEELED VEHICLE, SPECIAL PURP. EQUIP., PAINT BOOTH					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F		UNOCC	65.0 °F			
	SUMMER OCC	°F		UNOCC	°F			

ZONE NO.	I	FUNCTION:	WELDING/PAINT/BODY SPECIALTY BAY					
OCCUPANCY HOURS:	M-F	730	TO	1630	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	70.0 °F		UNOCC	65.0 °F			
	SUMMER OCC	°F		UNOCC	°F			

REMARKS: 8 SPACE HEATERS.

BATTERY CHARGING ROOM: BATTERY CHARGERS RUN CONTINUOUSLY AS DO THE  
ASSOCIATED EXHAUST FANS.

SEPERATE AIR HANDLING SYSTEM FOR ROOM 171.

ROOM 163 HAS AC.

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: **4530**

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **4530HTP1****BOILER & CONVERTER SURVEY OBSERVATIONS**

HTP1	BOILER/CONVERTER NO.	UTILITY ROOM	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: HTHW-(40%GLYCOL SOLUTION)			at 100%	% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

B&G	MFG.	HTP2-1900	MODEL	22400000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
75	HW PUMP 1 - HP	B&G	MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT: LARGEST B&G PACKAGE					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	630	630	630	630	630	630	630				
REQUIRED STOP TIME	2100	2100	2100	2100	2100	2100	2100				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FILE: 4530HV1**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL:		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530HV2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>HV2</b>	AHU NO.	<b>MER-I</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>AREA 'B'</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

			MFG.					MODEL
75.0	SUPPLY FAN HP	MAGNETEK	MFG.					MODEL
15.0	RET/EXH FAN HP	MAGNETEK	MFG.					MODEL
30170	CFM-HTG	CFM-CLG	74%	MIN %OA	100%	MAX %OA	11.1%	% HTG AREA SERVED
COMMENT: / 0.1								

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		630	630	630	630	630	630	630			
REQUIRED STOP TIME		2100	2100	2100	2100	2100	2100	2100			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES : N = NO )							
COMMENTS:									



FILE: 4530HV3

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530MAU1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>MAU1</b>	AHU NO.	<b>MER-I</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>AREA 'G' AND 'H'</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

			MFG.					MODEL
30.0	SUPPLY FAN HP		MFG.					MODEL
	RET/EXH FAN HP		MFG.		20			MODEL
43380	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	22.2% % HTG AREA SERVED
COMMENT: 21.2								

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:								S	M	T	W	T	F	S	COMMENTS	
PRESENT START TIME								0	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME								2400	2400	2400	2400	2400	2400	2400	2400	
REQUIRED START TIME								630	630	630	630	630	630	630	630	
REQUIRED STOP TIME								2100	2100	2100	2100	2100	2100	2100	2100	
MONTHS ON:																
J	F	M	A	M	J	J	A	S	O	N	D					
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 4530MAU2**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 4530MAU3

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT	65	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 4530MAU4

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT		65 UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 4530MAU5

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT X	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	70	OCC HEAT	65 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	N EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						

FILE: 4530MAU6

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT		65 UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: SMA

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY:

FILE: 4530MAU7

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>MAU7</b>	AHU NO.	<b>AREA 'E'</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>NI. CAD BATTERY RM, 'E'</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
2.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
1540	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	3.7%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		630	630	630	630	630	630	630			
REQUIRED STOP TIME		2100	2100	2100	2100	2100	2100	2100			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	<b>X</b>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT <b>X</b>	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	<b>70</b>	OCC HEAT	<b>65</b> UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>N</b> RA (Y/N)	<b>N</b> EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	<b>N</b>	(Y = YES ; N = NO)				
COMMENTS:						



FILE: **4530MAU8**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	70	OCC HEAT		65 UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 4530MAU9**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	70	OCC HEAT		65 UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: SMA

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY:

FILE: 4530RAD1

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD1</b>	PER RAD NO.	<b>MECH RM</b>	LOCATION (RM)
	SOURCE OF HEATING	AREA 'A'	SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC
OTHER			
COMMENT:			

**NAMEPLATE:**

0.0833	HW PUMP 1 - HP	MFG.	MODEL
	HW PUMP 2 - HP	MFG.	MODEL
	HW PUMP 3 - HP	MFG.	MODEL
	HW PUMP 4 - HP	MFG.	MODEL
COMMENT:		11.1%	% AREA HEATING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	N			
REQUIRED START TIME		630	630	630	630	630	630	630				
REQUIRED STOP TIME		2100	2100	2100	2100	2100	2100	2100				
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	0	0	0	0	0	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:		NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:						

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 4530

EMC NO.: 1406-006  
 DATE: 15-NOV-94  
 PREPARED BY: CSW  
 CHECKED BY: BG  
 FILE: 4530DHW1

### DOMESTIC HW SURVEY OBSERVATIONS

DHW1	BOILER/CONVERTER NO.	MER 138	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

### UNIT TYPE:

NO.2 OIL	NO.6 OIL	N.GAS	X	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM		OTHER	CONVERTER TYPE:

COMMENT: USED IN CONNECTION WITH HX-2. DHW1 IS NOT CURRENTLY IN USE.

### NAMEPLATE:

A O SMITH	MFG.	MODEL	CAPACITY OUTPUT (BTUH,KW)
	MFG.	MODEL	CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
------------	------------------	---------------------------	--------

### OPERATION:

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D

### CONTROLS:

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

FILE: 4530AC1

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530AC2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AC2	AHU NO.	MER-II	LOCATION (RM)
	REF. SYS. SERVING AHU	TMDE LAB IN AREA 'A'	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT	X	REHEAT		INDUCTION		VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**NAMEPLATE:**

				MFG.					MODEL
5.0	SUPPLY FAN HP			MFG.					MODEL
5.0	RET/EXH FAN HP			MFG.					MODEL
6000	CFM-HTG	6000	CFM-CLG	100%	MIN %OA	100%	MAX %OA	5.6%	% HTG AREA SERVED
COMMENT:									

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
	NONE		STM		HW	X	ELEC		MOD VLV	REHEAT
	NONE		STM	X	HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	630	630	630	630	630	630	630				
REQUIRED STOP TIME	2100	2100	2100	2100	2100	2100	2100				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530AC3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AC3	AHU NO.	AREA 'D'	LOCATION (RM)
	REF. SYS. SERVING AHU	COMMUNIC/ELEC & OFFICES	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT	X	REHEAT		INDUCTION		VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**NAMEPLATE:**

				MFG.					MODEL	
5.0	SUPPLY FAN HP				MFG.					MODEL
5.0	RET/EXH FAN HP				MFG.					MODEL
2500	CFM-HTG	2500	CFM-CLG	36%	MIN %OA	100%	MAX %OA	5.6%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
	NONE		STM		HW	X	ELEC		MOD VLV	REHEAT
	NONE		STM	X	HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		630	630	630	630	630	630	630			
REQUIRED STOP TIME		2100	2100	2100	2100	2100	2100	2100			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530ACC1

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC1	CHILLER/COMPRESSOR NO.		LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC1
	ABSORBTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	15 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS	AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	HP
COMMENTS:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	630	630	630	630	630	630	630				
REQUIRED STOP TIME	2100	2100	2100	2100	2100	2100	2100				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530ACC2

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC2	CHILLER/COMPRESSOR NO.		LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC2
	ABSORPTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					27.083
					CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS		AMPS	PH	HZ
					HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP

COMMENTS:

**OPERATION:**

OPERATION:											
HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		630	630	630	630	630	630	630			
REQUIRED STOP TIME		2100	2100	2100	2100	2100	2100	2100			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: **4530**

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: **CSW**CHECKED BY: **BG**FILE: **4530ACC3****REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC3	CHILLER/COMPRESSOR NO.		LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC3
	ABSORPTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					6.6667 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS		AMPS	PH	HZ
					HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT				
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?				
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400					
REQUIRED START TIME	630	630	630	630	630	630	630					
REQUIRED STOP TIME	2100	2100	2100	2100	2100	2100	2100					
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
0	0	0	0	1	1	1	1	1	0	0	0	

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 4530

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 4530HX2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX2	BOILER/CONVERTER NO.	MER 138	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: DHW-DCW			% HTG AREA SERVED	
HWS:152 F HWR 207 F			BB RADIATION ONLY	

**NAMEPLATE:**

RECO		MFG.	SER# s-13736.20	MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
		MFG.		MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
0.0833	HW PUMP 1 - HP		B&G	MFG.	SLC-25B 103202	MODEL
	HW PUMP 2 - HP			MFG.		MODEL
	HW PUMP 3 - HP			MFG.		MODEL
COMMENT: MAX ALLOW. PR 150 PSI AT 250 f						

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		630	630	630	630	630	630	630			
REQUIRED STOP TIME		2100	2100	2100	2100	2100	2100	2100			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	0	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 10000

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10000

EMC NO.: 1406-006

DATE: Mar-94

PREPARED BY: CSW

CHECKED BY:

FILE: 10000

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10000

BLDG NAME: DIV CMD/CTL BUILDING

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F	600	TO	1800	SAT	0	TO	0		
	SUN	0	TO	0						
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF					
	SUMMER OCC	øF		UNOCC	øF					

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F		TO		SAT		TO			
	SUN		TO							
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF					
	SUMMER OCC	øF		UNOCC	øF					

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F		TO		SAT		TO			
	SUN		TO							
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF					
	SUMMER OCC	øF		UNOCC	øF					

REMARKS: SF-1 3950/1975 CFM, SUMMER VENTILATON  
SF-2 3805/1903 CFM, SUMMER VENTILATION  
SF-3 4255/2128 CFM, SUMMER VENTILATION  
SF-4 6560/3280 CFM, SUMMER VENTILATION  
SF-31 5906/2953 CFM, SUMMER VENTILATION



LOCATION: FORT DRUM, NY      BLDG: 10000

EMC NO.: 1406-006

DATE: Mar-94

PREPARED BY: **CSW**

CHECKED BY:

FILE: 10000HE2

## BOILER & CONVERTER SURVEY OBSERVATIONS

HE-2	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BUILDING	SERVES AREA

## UNIT TYPE:

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:								% HTG AREA SERVED	
								BB RADIATION ONLY	

## NAMEPLATE:

		MFG.		MODEL	1108000	CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
		MFG.		MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
	HW PUMP 1 - HP		MFG.			MODEL
	HW PUMP 2 - HP		MFG.			MODEL
	HW PUMP 3 - HP		MFG.			MODEL
COMMENT:						

## OPERATION:

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF)		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY:

CHECKED BY:

FILE: 10000AH1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-1</b>	AHU NO.		LOCATION (RM)
	REF. SYS. SERVING AHU		SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT		REHEAT		INDUCTION		VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**PART TRACER****NAMEPLATE:**

					MFG.					MODEL
1.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
1125	CFM-HTG	1125	CFM-CLG	33%	MIN %OA	100%	MAX %OA	2.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	<b>X</b>	HW		ELEC		MOD VLV	HEATING
<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	REHEAT
<b>X</b>	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	<b>X</b>	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOC TRACER			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC	<b>X</b>	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	<b>68</b>	OCC HEAT	<b>50</b>	UNOCC HEAT	<b>68</b>	OCC COOL	<b>50</b>	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>Y</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**ON TRACER**



**FILE: 10000AH2**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 100000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY: BG

CHECKED BY:

FILE: 10000AH3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-3</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	<b>PART TRACER</b>			

**NAMEPLATE:**

				MFG.						MODEL	
2.0	SUPPLY FAN HP				MFG.						MODEL
	RET/EXH FAN HP				MFG.						MODEL
2910	CFM-HTG	2910	CFM-CLG	33%	MIN %OA	100%	MAX %OA	8.0%	% HTG AREA SERVED		
COMMENT:											

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW				MOD VLV	COOLING

**OPERATION:**

OF EMPLOYMENT											
HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOC TRACER		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

FILE: 10000AH5

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 100000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY:

CHECKED BY:

FILE: 10000AH4

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-4</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	PART TRACER			

**NAMEPLATE:**

				MFG.					MODEL	
3.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
2575	CFM-HTG	2575	CFM-CLG	100%	MIN %OA	100%	MAX %OA	1.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOC TRACER		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	<b>X</b>	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK			
SPACE SETPOINT (*F):	<b>68</b> OCC HEAT	<b>50</b> UNOCC HEAT	<b>68</b> OCC COOL	<b>50</b> UNOCC COOL		
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER		
DAMPER CONTROL:	<b>N</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)		
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER		
DEMAND LIMIT:	(Y = YES ; N = NO)					
COMMENTS:	ON TRACER					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 100000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY:

CHECKED BY:

FILE: 10000AH6

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-6</b>	AHU NO.		LOCATION (RM)
	REF. SYS. SERVING AHU		SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT		REHEAT		INDUCTION		VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:	PART TRACER							

**NAMEPLATE:**

					MFG.					MODEL
0.1	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
410	CFM-HTG	410	CFM-CLG	100%	MIN %OA	100%	MAX %OA	1.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	<b>X</b>	HW		ELEC		MOD VLV	HEATING
<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	REHEAT
<b>X</b>	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	<b>X</b>	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOC TRACER		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

FILE: 10000AH7

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

**FILE: 10000AH8**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

**FILE: 10000AH9**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									





		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 100000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY:

CHECKED BY:

FILE: 10000A12

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-12</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	PART TRACER			

**NAMEPLATE:**

				MFG.					MODEL	
0.5	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
1150	CFM-HTG	1150	CFM-CLG	33%	MIN %OA	100%	MAX %OA	2.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW				MOD VLV	COOLING

**OPERATION:**

OF THE MONTH:											
HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOC TRACER		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	<b>X</b>	DDC	COMMENTS
<b>THERMOSTAT TYPE:</b>	SINGLE STPT	DUAL SETPNT	SETBACK			
<b>SPACE SETPOINT (°F):</b>	<b>68</b> OCC HEAT	<b>50</b> UNOCC HEAT	<b>68</b> OCC COOL	<b>50</b> UNOCC COOL		
<b>OTHER SETPOINTS (°F):</b>	HOT DECK	COLD DECK	MIXED AIR	OTHER		
<b>DAMPER CONTROL:</b>	<b>N</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)		
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER		
<b>DEMAND LIMIT:</b>	(Y = YES ; N = NO)					
<b>COMMENTS:</b>	ON TRACER					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 100000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY:

CHECKED BY:

FILE: 10000A13

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-13</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	PART TRACER			

**NAMEPLATE:**

				MFG.					MODEL	
0.5	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
1150	CFM-HTG	1150	CFM-CLG	33%	MIN %OA	100%	MAX %OA	2.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	X	DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOC TRACER			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	<b>X</b>	DDC	COMMENTS
<b>THERMOSTAT TYPE:</b>	SINGLE STPT	DUAL SETPNT	SETBACK			
<b>SPACE SETPOINT (*F):</b>	<b>68</b> OCC HEAT	<b>50</b> UNOCC HEAT	<b>68</b> OCC COOL	<b>50</b> UNOCC COOL		
<b>OTHER SETPOINTS (*F):</b>	HOT DECK	COLD DECK	MIXED AIR	OTHER		
<b>DAMPER CONTROL:</b>	<b>N</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)		
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER		
<b>DEMAND LIMIT:</b>	(Y = YES ; N = NO)					
<b>COMMENTS:</b>	ON TRACER					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 100000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY:

CHECKED BY:

FILE: 10000A14

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-14</b>	AHU NO.		LOCATION (RM)
	REF. SYS. SERVING AHU		SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR	<b>X</b>	H&V
	MULTIZONE		DOUBLE DT		REHEAT		INDUCTION		VAV
	NUMBER OF ZONES		OTHER						
	COMMENT:		<b>PART TRACER</b>						

**NAMEPLATE:**

				MFG.					MODEL
<b>10.0</b>	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.					MODEL
<b>4000</b>	CFM-HTG		CFM-CLG	<b>33%</b>	MIN %OA	<b>100%</b>	MAX %OA	<b>12.0%</b>	% HTG AREA SERVED
	COMMENT:								

**COILS:**

<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	<b>X</b>	HW		ELEC		MOD VLV	HEATING
<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	REHEAT
<b>X</b>	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
<b>X</b>	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOC TRACER		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC	<b>X</b>	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	<b>68</b>	OCC HEAT	<b>50</b>	UNOCC HEAT	<b>68</b>	OCC COOL	<b>50</b>	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>Y</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
		<b>ON TRACER</b>							

**FILE: 10000A15**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	68	OCC HEAT	50	UNOCC HEAT	68	OCC COOL	50	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
ON TRACER									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY: BG

CHECKED BY:

FILE: 10000AH16

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-16</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	PART TRACER			

**NAMEPLATE:**

				MFG.					MODEL
1.5	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.					MODEL
1610	CFM-HTG	0	CFM-CLG	MIN %OA	100%	MAX %OA	6.0%	% HTG AREA SERVED	
COMMENT:									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLO		Y	
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
X	X	X	X	X	X	X	X	X	X	X	X	

**CONTROLS:**

	<b>X</b>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	<b>68</b>	OCC HEAT	<b>50</b> UNOCC HEAT	<b>68</b> OCC COOL	<b>50</b> UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )				
COMMENTS:						

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY: BG

CHECKED BY:

FILE: 10000AH18

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-18</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	<b>PART TRACER</b>			

**NAMEPLATE:**

				MFG.					MODEL	
1.5	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
2265	CFM-HTG	0	CFM-CLG		MIN %OA	100%	MAX %OA	8.0%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLO	Y	
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

	<b>X</b>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	<b>68</b>	OCC HEAT	<b>50</b> UNOCC HEAT	<b>68</b> OCC COOL	<b>50</b> UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:		(Y = YES ; N = NO)				
COMMENTS:						



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10000

EMC NO.: 1406-006

DATE: 23-Feb

PREPARED BY: BG

CHECKED BY:

FILE: 10000AH17

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU-17</b>	AHU NO.	LOCATION (RM)
	REF. SYS. SERVING AHU	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	PART TRACER			

**NAMEPLATE:**

		MFG.	MODEL
<b>1.5</b>	SUPPLY FAN HP	MFG.	MODEL
	RET/EXH FAN HP	MFG.	MODEL
<b>2220</b>	CFM-HTG	<b>0</b> CFM-CLG	MIN %OA 100% MAX %OA 8.0% % HTG AREA SERVED
	COMMENT:		

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLO	Y	
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
X	X	X	X	X	X	X	X	X	X	X	X

**CONTROLS:**

	<b>X</b>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	<b>68</b>	OCC HEAT	<b>50</b> UNOCC HEAT	<b>68</b> OCC COOL	<b>50</b> UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:		(Y = YES ; N = NO)				
COMMENTS:						

**FIELD SURVEY NOTES**

BUILDING 10030

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10030

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10030BDS.WK1

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10030

BLDG NAME: UNIT CHAPEL 2

ZONE NO.	1	FUNCTION:						
OCCUPANCY HOURS:	M-F	SEE	TO	BELOW	SAT	0	TO	0
	SUN		TO					
PRESENT TEMP	WINTER OCC	65.0	øF	UNOCC	øF			
	SUMMER OCC		øF	UNOCC	øF			

ZONE NO.		FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC		øF	UNOCC	øF			
	SUMMER OCC		øF	UNOCC	øF			

ZONE NO.		FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC		øF	UNOCC	øF			
	SUMMER OCC		øF	UNOCC	øF			

REMARKS: SAME LAYOUT AS UNIT CHAPEL 1

M &amp; W 1830 - 2000

SAT 1700 - 1800

EMC NO.: 1406-006

DATE: 14-NOV-84

PREPARED BY: **CSW**

CHECKED BY: BG

FILE: 10030HX1

## BOILER & CONVERTER SURVEY OBSERVATIONS

HX1	BOILER/CONVERTER NO.	MECH. ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	ENTIRE BLDG	SERVES AREA

## UNIT TYPE:

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							100%	% HTG AREA SERVED	
TYPICAL							BB RADIATION ONLY		

## NAMEPLATE:

B&G		MFG.		MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
		MFG.		MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
	HW PUMP 1 - HP			MFG.		MODEL
	HW PUMP 2 - HP			MFG.		MODEL
	HW PUMP 3 - HP			MFG.		MODEL
COMMENT:						

**OPERATION:**

[illegible]

**CONTROLS:**

	Y	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		PSIG		HW SUPPLY					
RESET CONTROL (oF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)		OTHER					
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 4405

EMC NO.: 1406-006

DATE: 14-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE:

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 4405

BLDG NAME: UNIT CHAPEL 1

ZONE NO.	1	FUNCTION:						
OCCUPANCY HOURS:	M-F	SEE	TO	BELOW	SAT	0	TO	0
	SUN	700	TO	1500				
PRESENT TEMP	WINTER OCC	65.0	øF	UNOCC	øF			
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

REMARKS: SAME LAYOUT AS UNIT CHAPEL 2

MTHF 0900 - 1800

T&amp;W 0900 - 2100

SAT 0700 - 1500

TH 2 TIMES A MONTH 0900-2100

**FIELD SURVEY NOTES**

BUILDING 10050

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050

EMC NO.: 1406-006

DATE: 15-Nov-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10050BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10050

BLDG NAME: PHYSICAL FITNESS CENTER

ZONE NO.	1	FUNCTION: MAIN GYM						
OCCUPANCY HOURS:	M-F	645	TO	2200	SAT	900	TO	2100
	SUN	900	TO	2100				
PRESENT TEMP	WINTER OCC	70.0 øF		UNOCC	65.0 øF			
	SUMMER OCC	øF		UNOCC	øF			

ZONE NO.		2		FUNCTION: NATATORIUM													
OCCUPANCY HOURS:		M-F				TO				SAT				TO			
		SUN				TO											
PRESENT TEMP		WINTER OCC		77.0 øF				UNOCC		øF							
		SUMMER OCC		øF				UNOCC		øF							

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC	øF			
	SUMMER OCC		øF		UNOCC	øF			

REMARKS: 81 F POOL WATER TEMPERATURE

POOL HOURS OF OPERATION:

MWF 1530-2000

TU-TH 1630-2000

SA-SU 1030-2000

LAP POOL 1130-1330

IN GYM:

4 H&amp;V UNITS

6 WALL EXHAUST

8 WALL LOUVERS

4 OUTDOOR AIR DOORS (GARAGE DOOR SIZE)

NOTE: 4 IDENTICAL ELECTRIC HEATERS ARE LOCATED IN OBSERVATION BLDG.

ELECTRIC HEATER 17075 BTU/HR (EACH)

FILE: 10050A10

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	72	OCC HEAT	70 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	N EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						



FILE: 10050A11

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	<b>72</b>	OCC HEAT	<b>72</b>	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	<b>55</b>	COLD DECK	<b>55</b>	MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>N</b>	RA (Y/N)	<b>N</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	<b>N</b>	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 10050A12

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10050AH1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU1</b>	AHU NO.	<b>GYM CEILING</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>GYM</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	<b>X</b>	VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.				MODEL
15.0		SUPPLY FAN HP		MFG.	Y			MODEL
	RET/EXH FAN HP		MFG.		14			MODEL
20875	CFM-HTG	0	CFM-CLG	20%	MIN %OA	100%	MAX %OA	10.0% % HTG AREA SERVED
COMMENT:								

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b>	HW	ELEC	<b>X</b> MOD VLV HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

OVERSIGHT											
HOURS ON:	S		M	T	W	T	F	S	COMMENTS		
PRESENT START TIME	0		0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME	2400		2400	2400	2400	2400	2400	2400			
REQUIRED START TIME	800		545	545	545	545	545	800			
REQUIRED STOP TIME	2000		2100	2100	2100	2100	2100	2000			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	72	OCC HEAT	72 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	N EA (Y/N)	
		MA CONTROL	X ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:	40% GLYCOL					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG:

**10050 FIT CENTER**

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: **BG**

CHECKED BY:

FILE: **10050AH2****AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU2	AHU NO.	GYM CEILING	LOCATION (RM)
	REF. SYS. SERVING AHU	GYM	SERVES AREA

**UNIT TYPE:**

SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	X	VAV
NUMBER OF ZONES	OTHER				
COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
15.0	SUPPLY FAN HP			MFG.	Y				MODEL
	RET/EXH FAN HP			MFG.	14				MODEL
20875	CFM-HTG	0	CFM-CLG	20%	MIN %OA	100%	MAX %OA	10.0%	% HTG AREA SERVED
COMMENT: 14%									

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	N			
REQUIRED START TIME	800	545	545	545	545	545	800				
REQUIRED STOP TIME	2000	2100	2100	2100	2100	2100	2000				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	40% GLYCOL								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10050AH3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU3</b>	AHU NO.	<b>GYM CEILING</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>GYM</b>	SERVES AREA

**UNIT TYPE:**

SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	X	VAV
NUMBER OF ZONES	OTHER				
COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
15.0	SUPPLY FAN HP			MFG.	Y				MODEL
	RET/EXH FAN HP			MFG.					MODEL
20875	CFM-HTG	0	CFM-CLG	20%	MIN %OA	100%	MAX %OA	14% <del>10.0%</del>	% HTG AREA SERVED
COMMENT:									

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	NO		
REQUIRED START TIME		800	545	545	545	545	545	800			
REQUIRED STOP TIME		2000	2100	2100	2100	2100	2100	2000			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	Y	( Y = YES ; N = NO )							
COMMENTS:	40% GLYCOL								

FILE: 10050AH4

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	72	OCC HEAT	72 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	N EA (Y/N)	
		MA CONTROL	X ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:	<b>40% GLYCOL</b>					

FILE: **10050AH5**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	70	OCC HEAT	70 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	N MAX OA (Y/N)	Y RA (Y/N)	N EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10050AH6

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU6	AHU NO.	POOL MECH ROOM	LOCATION (RM)
	REF. SYS. SERVING AHU	POOL AREA	SERVES AREA

**UNIT TYPE:**

SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	X	VAV
NUMBER OF ZONES	OTHER				
COMMENT:	14040 BTU/HR HEATING COIL				

**NAMEPLATE:**

					MFG.				MODEL
5.0	SUPPLY FAN HP				MFG.				MODEL
	RET/EXH FAN HP				MFG.	40%			MODEL
6500	CFM-HTG	0	CFM-CLG	0%	MIN %OA	100%	MAX %OA	<del>10.0%</del>	% HTG AREA SERVED
COMMEN 140400 BTUH									

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	X MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	NO			
REQUIRED START TIME		1030	1530	1630	1530	1630	1530	1030				
REQUIRED STOP TIME		2000	2000	2000	2000	2000	2000	2000				
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	N MAX OA (Y/N)	Y RA (Y/N)	N EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N (Y = YES ; N = NO)				
COMMENTS:					



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10050AH7

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU7	AHU NO.	POOL MECH ROOM	LOCATION (RM)
	REF. SYS. SERVING AHU	POOL AREA	SERVES AREA

**UNIT TYPE:**

SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	X	VAV
NUMBER OF ZONES	OTHER				
COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
2.0	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.	1.6				MODEL
2500	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	10.0%	% HTG AREA SERVED
COMMEN	248400 BTU/HR			40% GLYCOL					

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	NO		
REQUIRED START TIME		1030	1530	1630	1530	1630	1530	1030			
REQUIRED STOP TIME		2000	2000	2000	2000	2000	2000	2000			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y =YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10050AH8

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU8</b>	AHU NO.	<b>MECH ROOM</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>MEZZ. &amp; MEN'S LOCKERS</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.				MODEL
7.5	SUPPLY FAN HP			MFG.	Y			MODEL
	RET/EXH FAN HP			MFG.	5%			MODEL
9364	CFM-HTG	0	CFM-CLG	100%	MIN %OA	100%	MAX %OA	5.0% % HTG AREA SERVED
COMMEN		859,700		BTUH				

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b>	HW	ELEC	<b>X</b> MOD VLV HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	NO		
REQUIRED START TIME		800	545	545	545	545	545	800			
REQUIRED STOP TIME		2000	2100	2100	2100	2100	2100	2000			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: **10050AH9**

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	<b>72</b>	OCC HEAT	<b>72</b>	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	<b>55</b>	COLD DECK	<b>55</b>	MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>N</b>	RA (Y/N)	<b>N</b>	EA (Y/N)	
		MA CONTROL	<b>X</b>	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	<b>N</b>	( Y = YES ; N = NO )							
COMMENTS:									

FILE: **10050HE1**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: \*\*\*\*\*

PREPARED BY: BG

CHECKED BY:

FILE: 10050HE3

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE3	BOILER/CONVERTER NO.	POOL MER	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	POOL WATER HEAT EXCHANG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM	X	OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW	X	OTHER				USE:
COMMENT: HTHW-POOL WATER							% HTG AREA SERVED		
EWT: 75 F LWT: 120 F							BB RADIATION ONLY		

**NAMEPLATE:**

MFG.	MODEL	1065000	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
10 HW PUMP 1 - HP	MFG.		MODEL
HW PUMP 2 - HP	MFG.		MODEL
HW PUMP 3 - HP	MFG.		MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	830	1330	1430	1330	1430	1330	830				
REQUIRED STOP TIME	1900	1900	1900	1900	1900	1900	1900				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10050 FIT CENTER

EMC NO.: 1406-006

DATE: \*\*\*\*\*

PREPARED BY: BG

CHECKED BY:

FILE: 10050RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD1</b>	PER RAD NO.	BLDG. PEREMETER	LOCATION (RM)
	SOURCE OF HEATING	BLDG. PEREMETER	SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC
OTHER			
COMMENT:	GLYCOL/WATER SYSTEM		

**NAMEPLATE:**

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL
HW PUMP 4 - HP	MFG.	MODEL
COMMENT:	% AREA HEATING	

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	800	545	545	545	545	545	800				
REQUIRED STOP TIME	2000	2100	2100	2100	2100	2100	2000				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 10200



FILE: 10200AHU1

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	68	OCC HEAT	68 UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	N EA (Y/N)	
		MA CONTROL	Y ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )				
COMMENTS:	THE BUILDING ALSO HAS 3 SUPPLY FANS WHICH ARE NOT CONNECTED TO AHU1 OR AHU2. THEY PROVIDE UNHEATED AND UNCOOLED 100% O.A. VENTILATION. THESE ARE SF-1 CFM=10400/5200 (2 SPEED)					
	SF-2 CFM =1100/550					
	SF-3 CFM=700/350					

FILE: 10200AHU2

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):	135	HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, BLDG: 10200 BDE. HQ.

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10200HE1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE1	BOILER/CONVERTER NO.	MECH. ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

	STEAM			HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL	N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW	HTHW/STM		OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW	OTHER				USE:
COMMENT:						20%	% HTG AREA SERVED	
							BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.		MODEL	209400	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

FILE: 10200HE1

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	200 HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: BDE. HQ.

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10200RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD1</b>	PER RAD NO.		LOCATION (RM)
<b>HE-1</b>	SOURCE OF HEATING	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	X	HW		ELECTRIC				
OTHER								
COMMENT:								

**NAMEPLATE:**

HW PUMP 1 - HP		MFG.		MODEL
HW PUMP 2 - HP		MFG.		MODEL
HW PUMP 3 - HP		MFG.		MODEL
HW PUMP 4 - HP		MFG.		MODEL
COMMENT:			20.0%	% AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 10205

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10205

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10205

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10205

BLDG NAME: DENTAL CLINIC

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F	600	TO	1800	SAT	0	TO	0		
	SUN	0	TO	0						
PRESENT TEMP	WINTER OCC	72.0	øF	UNOCC	øF					
	SUMMER OCC	øF		UNOCC	øF					

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F		TO		SAT		TO			
	SUN		TO							
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF					
	SUMMER OCC	øF		UNOCC	øF					

ZONE NO.	FUNCTION:									
OCCUPANCY HOURS:	M-F		TO		SAT		TO			
	SUN		TO							
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF					
	SUMMER OCC	øF		UNOCC	øF					

REMARKS: 4 LARGE SKYLIGHTS  
2 HOFFMAN EXHAUSTERS

**CAPACITY (MBH)**

RHC-1	14
RHC-2	27.5
RHC-3	39.6
VAV 15,16,17	7.4
VAV 5,2,14	8.7
VAV 12	14.4
VAV 1	15.5
VAV 3,4,7,11,9,13	21.4
VAV 6,8,10	37.7

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10205

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10205ACC

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACC1	CHILLER/COMPRESSOR NO.	COURTYARD	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AHU-1
	ABSORPTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.	MODEL	SERIAL NO.
VOLTS	AMPS	PH	HZ
			50 CAPACITY (TONS)
TOWER	MFG.	MODEL	# OF FANS
VOLTS	AMPS	PH	HZ
			5 HP each
CW PUMP	MFG.	MODEL	SERIAL NO.
VOLTS	AMPS	PH	HZ
			HP
CNW PUMP	MFG.	MODEL	SERIAL NO.
VOLTS	AMPS	PH	HZ
			HP
COMMENTS: 54.6 KW			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME	0	600	600	600	600	600	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					



FILE: **10205AH1**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 10205

EMC NO.: 1406-006  
 DATE: 09-NOV-94  
 PREPARED BY: BG  
 CHECKED BY:  
 FILE:

DOMESTIC HW SURVEY OBSERVATIONS			
DHW	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

UNIT TYPE:							
NO.2 OIL		NO.6 OIL		N.GAS	X	ELEC	FUELS:
STM/HW		HTHW/HW		HTHW/STM		OTHER	CONVERTER TYPE:
COMME 82 GALLON							

NAMEPLATE:					
LOCHINVAR	MFG.	HCK27-082	MODEL	46076	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)
DOMESTIC HW CIRCULATION PUMP:					
HW PUMP 1 - HP		MFG.			MODEL
HW PUMP 2 - HP		MFG.			MODEL
HW PUMP 3 - HP		MFG.			MODEL
COMMENT: 13.5 KW					

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON

OPERATION:											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	600	600	600	600	600	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

CONTROLS:								
		PNEUMATIC		ELECTRIC		ELEC'NIC	DDC	COMMENTS
SETPOINTS				HW SUPPLY				
COMMENTS:								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10205

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10205HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM		PSIG		HW		TEMP.		BOILER TYPE:
NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
SPACE HEAT		DHW		OTHER				USE:
COMMENT: Perimeter Rad. 20% % HTG AREA SERVED								
.87 BB RADIATION ONLY								

**NAMEPLATE:**

	MFG.		MODEL	942830	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
1	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	600	600	600	600	600	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10205

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10205HX2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX2	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	GLYCOL SYSTEM	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	X OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT: HW-GLYCOL		80% % HTG AREA SERVED		
		BB RADIATION ONLY		

**NAMEPLATE:**

MFG.	MODEL	306400	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
0.3333	HW PUMP 1 - HP	B&G	MFG. MODEL
	HW PUMP 2 - HP		MFG. MODEL
	HW PUMP 3 - HP		MFG. MODEL
COMMENT:			

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10205

EMC NO.: 1406-006

DATE: 10-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10205RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

RAD	PER RAD NO.	WHOLE BLDG	LOCATION (RM)
	SOURCE OF HEATING		SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC				
OTHER							
COMMENT:							

**NAMEPLATE:**

HW PUMP 1 - HP		MFG.		MODEL
HW PUMP 2 - HP		MFG.		MODEL
HW PUMP 3 - HP		MFG.		MODEL
HW PUMP 4 - HP		MFG.		MODEL
COMMENT:			20.0%	% AREA HEATING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 10207

TYPICAL: 10502

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCHANGE/CLUB

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY:

FILE: 10207BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 10207 BLDG NAME: EXCHANGE/CLUB

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

REMARKS:	EXHAUST FANS	HP	CONTROL	CFM	UNIT HTR	BTUH
	E1	0.0833333	AHU1 INTERLOCK	225	UH-1	19300
	E2	3.3 AMP	SCR. CONT	410	UH-2	37365
	E3	2.3 AMP	AHU2 INTERLOCK	300	UH-3	15768
	E4	0.7 AMP		107		
	E5		5 THERMOSTAT	12500		CFM
	E6		0.5 MANUAL SWITCH	400	UH-1	400
	E7		0.75 TIMER SW	2500	UH-2	900
	E8	3.3 AMP	TIME CLOCK	410	UH-3	500
	VAV UNIT SCHEDULE	BTU/HR	ROOF VENT SCHEDULE	CFM		
	V1	1200	RVI1	2500		
	V2	5400	RVI2	4500		
	V3	4500	RVI3	6100		
	V4	7200	RVI4	4000		
	V5	24000	RVI5	2500		
	V6	22000	RVE1	2500		
			RVE2	4500		
	NOTE: SEE KITCHEN EQUIPMENT SCHEDULE		RVE3	6100		
			RVE4	4000		

FILE: 10207AH1

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	65	UNOCC HEAT	78	OCC COOL	78	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									





FILE: 10207AH3

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	X	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	65	UNOCC HEAT	78	OCC COOL	78	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 10207AH4**

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	<b>X</b>	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	<b>72</b>	OCC HEAT	<b>65</b>	UNOCC HEAT	<b>78</b>	OCC COOL	<b>78</b>	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>Y</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>Y</b>	EA (Y/N)	
		MA CONTROL	<b>X</b>	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: **EXCHANGE/CLUB**

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: **CSW**

CHECKED BY:

FILE: **10207BS****BOILER & CONVERTER SURVEY OBSERVATIONS**

<b>B1,2,3</b>	BOILER/CONVERTER NO.	<b>MER</b>	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	<b>WHOLE BLDG</b>	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	X	N.GAS	FUELS:
STM/HW	HTHW/HW	HTHW/STM	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT:				% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

<b>WELL-MCLAIN</b>	MFG.	<b>M-3PFG-PID-1040</b>	MODEL	<b>821,600</b>	CAPACITY OUTPUT (BTUH)
				<b>1040000</b>	CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
<b>2</b>	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

<b>X</b>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF)	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCHANGE/CLUB

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY:

FILE: 10207DHW

**DOMESTIC HW SURVEY OBSERVATIONS**

DHW1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

NO.2 OIL	NO.6 OIL	X	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW		HTHW/STM	OTHER	CONVERTER TYPE:

COMMENT:

**NAMEPLATE:**

STATE INDUSTRIES	MFG.	SBT 30 199 NE9 F	MODEL	199990	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

0	HW PUMP 1 - HP	MFG.	MODEL
	HW PUMP 2 - HP	MFG.	MODEL
	HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: **EXCHANGE/CLUB**

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: **CSW**

CHECKED BY:

FILE: **10207WC1****REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

WC1	CHILLER/COMPRESSOR NO.	EAST SIDE OF BLDG	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AHU1,2,3,4
	ABSORPTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
X	CHW	DX	OTHER

**NAMEPLATE:**

CHILLER	MFG.	CARRIER	MODEL	30 GB-070	SERIAL NO.
208 VOLTS		AMPS	3 PH	60 HZ	73 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS	AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	7.5 HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS						
- PRESSURE		LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE		LITE-HI	LITE-LOW	GAUGES		
- OTHER						

COMMENTS:

**FIELD SURVEY NOTES**

BUILDING 10502

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10502

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10502BS

**BOILER & CONVERTER SURVEY OBSERVATIONS**

B1,2,3	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	X N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT:			% HTG AREA SERVED	
			BB RADIATION ONLY	

**NAMEPLATE:**

WELL-MCLAIN	MFG.	M-3PFG-PID-1040	MODEL	821,600	CAPACITY OUTPUT (BTUH)
				1040000	CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
2	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					



PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 10502

EMC NO.: 1406-006  
 DATE: 17-NOV-94  
 PREPARED BY: BG  
 CHECKED BY:  
 FILE: 10502DHW

### DOMESTIC HW SURVEY OBSERVATIONS

DHW1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

### UNIT TYPE:

NO.2 OIL	NO.6 OIL	X	N.GAS	ELEC	FUELS:
STM/HW	HTHW/HW		HTHW/STM	OTHER	CONVERTER TYPE:

COMMENT:

### NAMEPLATE:

STATE INDUSTRIES	MFG.	SBT 30 199 NE9 F	MODEL	199990	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
------------	------------------	---------------------------	--------

### OPERATION:

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

### CONTROLS:

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10502

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10502WC1

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

WC1	CHILLER/COMPRESSOR NO.	EAST SIDE OF BLDG	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AHU1,2,3,4
	ABSORBTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
X	CHW	DX	OTHER

**NAMEPLATE:**

CHILLER	MFG.	CARRIER	MODEL	30 GB-070	SERIAL NO.
208 VOLTS		AMPS	3 PH	60 HZ	73 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
VOLTS		AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	7.5 HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
VOLTS		AMPS	PH	HZ	HP

COMMENTS:

**OPERATION:**

HOURS ON:			S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME			0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME			2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
				1	1	1	1	1				

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10502

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10502AH1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU1</b>	AHU NO.	<b>MEZZANINE</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>RETAIL SALES</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

CARRIER				MFG.	39BB060				MODEL
3.0	SUPPLY FAN HP			MFG.					MODEL
0.1	RET/EXH FAN HP			MFG.					MODEL
2500	CFM-HTG	2500	CFM-CLG	35% MIN %OA	100%	MAX %OA	15.0%	% HTG AREA SERVED	
COMMENT:									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	<b>X</b> CW		<b>X</b> MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	600	600	600	600	600	600	600	TIMECLOCK?			
PRESENT STOP TIME	2100	2100	2100	2100	2100	2100	2100				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC		COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK				
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL		
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER		
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)		
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER		
DEMAND LIMIT:		( Y = YES ; N = NO )								
COMMENTS:										

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10502

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10502AH2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU2	AHU NO.	MEZZANINE	LOCATION (RM)
	REF. SYS. SERVING AHU	LOBBY/POOL RM/GA	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

CARRIER				MFG.	39LA1101GA1031-L				MODEL
7.5	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.					MODEL
4500	CFM-HTG	4500	CFM-CLG	35%	MIN %OA	100%	MAX %OA	26.0%	% HTG AREA SERVED
COMMENT:									

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	X MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	X CW		X MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		600	600	600	600	600	600	600	TIMECLOCK?		
PRESENT STOP TIME		1500	1500	1500	1500	1500	1500	1500	YES		
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	Y EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	( Y = YES ; N = NO )				
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10502

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10502AH3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU3</b>	AHU NO.	<b>MEZZANINE</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>DINING &amp; FOOD SER</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

CARRIER				MFG.	39LA115/GA1031-R				MODEL
7.5	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.					MODEL
6100	CFM-HTG	6100	CFM-CLG	35% MIN %OA	100%	MAX %OA	36.0%	% HTG AREA SERVED	
COMMENT:									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	<b>X</b> CW		<b>X</b> MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	600	600	600	600	600	600	600	TIMECLOCK?			
PRESENT STOP TIME	2100	2100	2100	2100	2100	2100	2100				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10502

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10502AH4

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU4</b>	AHU NO.	<b>MEZZANINE</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>EM CLUB</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

CARRIER				MFG.						MODEL	
7.5	SUPPLY FAN HP				MFG.						MODEL
	RET/EXH FAN HP				MFG.						MODEL
4000	CFM-HTG	4000	CFM-CLG	35%	MIN %OA	100%	MAX %OA	23.0%	% HTG AREA SERVED		
COMMENT:											

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	<b>X</b> CW		<b>X</b> MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	600	600	600	600	600	600	600	TIMECLOCK?			
PRESENT STOP TIME	2100	2100	2100	2100	2100	2100	2100				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**FIELD SURVEY NOTES**

BUILDING 10506

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10506

EMC NO.: 1406-006

DATE: 9-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10506BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10506

BLDG NAME: CONNOR MEMORIAL

ZONE NO.			FUNCTION:	
OCCUPANCY HOURS:	M-F	700	TO	1600
	SAT	700	TO	1600
	SUN		TO	
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF
	SUMMER OCC	øF	UNOCC	øF

ZONE NO.			FUNCTION:	
OCCUPANCY HOURS:	M-F		TO	
	SAT		TO	
	SUN		TO	
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF
	SUMMER OCC	øF	UNOCC	øF

ZONE NO.			FUNCTION:	
OCCUPANCY HOURS:	M-F		TO	
	SAT		TO	
	SUN		TO	
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF
	SUMMER OCC	øF	UNOCC	øF

REMARKS: PRESENTLY OPEN 2 SATURDAYS A MONTH



**E M C ENGINEERS, INC.**

EMC NO.: 1406-006

PROJECT: UMCS STUDY

DATE: 9-NOV-94

CLIENT CONTRACT NO.: DACA01-94-D-0033

PREPARED BY: CSW

CLIENT PROJ. ENG: STEVE ROWLEY

CHECKED BY: BG

LOCATION: FORT DRUM, NY BLDG: 10506

FILE: 10506AC1

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACCU1	CHILLER/COMPRESSOR NO.	COURTYARD	LOCATION (RM)

**UNIT TYPE:**

CENTRIFUGAL WITH WATER SIDE COOLING TOWER	OTHER
RECIPROCATING WITH WATER SIDE COOLING TOWER	AHU'S SERVED
RECIPROCATING WITH AIR COOLED CONDENSING UNIT	AHU-1
ABSORPTION WITH WATER SIDE COOLING TOWER	
AIR COOLED CONDENSING UNIT	
CHW X DX	OTHER

**NAMEPLATE:**

CHILLER	MFG.	MODEL	SERIAL NO.
VOLTS	AMPS	PH	HZ
			37.5 CAPACITY (TONS)
TOWER	MFG.	MODEL	# OF FANS
VOLTS	AMPS	PH	HZ
			HP each
CW PUMP	MFG.	MODEL	SERIAL NO.
VOLTS	AMPS	PH	HZ
			HP
CNW PUMP	MFG.	MODEL	SERIAL NO.
VOLTS	AMPS	PH	HZ
			HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	700	700	700	700	700	700				
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	1600				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10506

EMC NO.: 1406-006

DATE: 9-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10506AHU1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU1</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>WHOLE BLDG</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.		MODEL
7.5	SUPPLY FAN HP			MFG.		MODEL
	RET/EXH FAN HP			MFG.		MODEL
9300	CFM-HTG	11500	CFM-CLG	21 % MIN %OA	21% MAX %OA	100.0% % HTG AREA SERVED
COMMENT:						

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	<b>X</b> DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	700	700	700	700	700	700				
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	1600				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	MIN OA (Y/N)	MAX OA (Y/N)	RA (Y/N)	EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	( Y = YES ; N = NO )				
COMMENTS:					

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 10506

EMC NO.: 1406-006  
 DATE: 10-NOV-94  
 PREPARED BY: CSW  
 CHECKED BY: BG  
 FILE: 10506DHW1

DOMESTIC HW SURVEY OBSERVATIONS			
DHW1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

UNIT TYPE:							
NO.2 OIL		NO.6 OIL		N.GAS	X	ELEC	FUELS:
STM/HW		HTHW/HW		HTHW/STM		OTHER	CONVERTER TYPE:
COMMENT:							

NAMEPLATE:					
LOCHINVAR	MFG.	HCK27-082	MODEL	46012	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)
DOMESTIC HW CIRCULATION PUMP:					
	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON

OPERATION:											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	700	700	700	700	700	700				
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	1600				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

CONTROLS:								
		PNEUMATIC		ELECTRIC		ELEC'NIC	DDC	COMMENTS
SETPOINTS				HW SUPPLY				
COMMENTS:								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10506

EMC NO.: 1406-006

DATE: 09-Nov-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10506HE1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							85.100%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

B&G	MFG.		MODEL	460000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
0.75	HW PUMP 1 - HP	US MOTORS	MFG.	A500P0R	MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0			
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	700	700	700	700	700	700			
REQUIRED STOP TIME		0	1600	1600	1600	1600	1600	1600			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10506

EMC NO.: 1406-006

DATE: 09-Nov-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10506HE2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE2	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	GLYCOL SYSTEM	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM	X	OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW		OTHER				USE:
COMMENT: 40%GLYCOL(60%WATER)-HW							0	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.		MODEL	183600	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
0.0833	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

OPERATION											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0				
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	700	700	700	700	700	700				
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	1600				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10506

EMC NO.: 1406-006

DATE: 9-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10506RD1

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD1</b>	PER RAD NO.	LOCATION (RM)
	SOURCE OF HEATING	WHOLE BLDG SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC
OTHER			
COMMENT:			

**NAMEPLATE:**

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL
HW PUMP 4 - HP	MFG.	MODEL

COMMENT:

100.0% % AREA HEATING

**OPERATION:**

<b>HOURS ON:</b>	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	
REQUIRED START TIME	0	700	700	700	700	700	700	
REQUIRED STOP TIME	0	1600	1600	1600	1600	1600	1600	

**MONTHS ON:**

J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	

COMMENTS:

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 10506

Building Sq.Ft.: 18,386

System Type: 11

System Name: CONDENSING UNIT

System Number: ACCU1

EMC NO.: 1406-006

DATE: 30-Mar-95

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

## Typical Building Information

Category	Construction	Use	Occ.	Day
13	BRICK	CLINIC W/O BEDS	0700-1600	MON-SAT

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	37.5
MBTU CAPC.	0
kW/Ton	0
MOSON	5
EFF	1
LOOK-UP VALUE	
EFFHP	79.00% 79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSVA	2,040	
Heating HRSVA	3,264	
C/H HRSVA	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.11E-03	2.11E-03
COAUHC	8.08E-04	8.08E-04
HOAOH	227.68	227.68
HOAOHC	139.72	139.72
COAOC	3.35E-03	3.35E-03
COAOHC	1.29E-03	1.29E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	2.77E-04	2.77E-04
NSUCHC	1.70E-04	1.70E-04
DDCCHC	1.32E-04	1.32E-04
DDCCC	3.44E-04	3.44E-04
DSC	3.81E+03	3.81E+03
NSC	2.59E+04	2.59E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

# E M C ENGINEERS, INC.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6

CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date: 30-Mar-95  
PAGE 2 OF 2

Bldg Number: 10506  
System Type 11  
System Name: CONDENSING UNIT  
System Number: ACCU1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,620.8	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	4.5	0.0	0.0	
Night Setback	0.0	0.0	0.0	
<b>Sub Total</b>	<b>4.5</b>	<b>5,046.7</b>	<b>0.0</b>	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	358.9	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance, Run Time, and Safety Alarms				3
<b>TOTAL</b>	<b>4.5</b>	<b>5,405.5</b>	<b>0.0</b>	<b>3</b>



**FIELD SURVEY NOTES**

BUILDING 10550

TYPICAL: 30, 175, 4450, 10150, 10250, 10450, 10650

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MESS HALL

EMC NO.: 1406-006

DATE: Feb-95

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10550BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 10550BLDG NAME: MESS HALL

ZONE NO.	1	FUNCTION:	
OCCUPANCY HOURS:	M-F	400 TO	0 SAT 400 TO 0
	SUN	0 TO	2400
PRESENT TEMP	WINTER OCC	68.0 °F	UNOCC 50.0 °F
	SUMMER OCC	68.0 °F	UNOCC 50.0 °F

ZONE NO.		FUNCTION:	
OCCUPANCY HOURS:	M-F	TO	SAT TO
	SUN	TO	
PRESENT TEMP	WINTER OCC	°F	UNOCC °F
	SUMMER OCC	°F	UNOCC °F

ZONE NO.		FUNCTION:	UPPER FLOOR
OCCUPANCY HOURS:	M-F	TO	SAT TO
	SUN	TO	
PRESENT TEMP	WINTER OCC	°F	UNOCC °F
	SUMMER OCC	°F	UNOCC °F

**REMARKS:**

WEEKDAYS BRK 0730 TO 900

LUNCH 1130 TO 1300

DINNER 1630 TO 1800

WEEKENDS BRK 800 TO 900

LUNCH 1200 TO 1300

DINNER 1600 TO 1700

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10550

EMC NO.: 1406-006

DATE: Nov-94

PREPARED BY: BG

CHECKED BY:

FILE: 10550BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 10550 BLDG NAME: ENL PER DINING

ZONE NO.		FUNCTION:	
OCCUPANCY HOURS:	M-F	400 TO 1930	SAT 400 TO 1930
	SUN	400 TO 1930	
PRESENT TEMP	WINTER OCC	øF	UNOCC øF
	SUMMER OCC	øF	UNOCC øF

ZONE NO.		FUNCTION:	
OCCUPANCY HOURS:	M-F	TO	SAT TO
	SUN	TO	
PRESENT TEMP	WINTER OCC	øF	UNOCC øF
	SUMMER OCC	øF	UNOCC øF

ZONE NO.		FUNCTION:	
OCCUPANCY HOURS:	M-F	TO	SAT TO
	SUN	TO	
PRESENT TEMP	WINTER OCC	øF	UNOCC øF
	SUMMER OCC	øF	UNOCC øF

REMARKS: CHECK OUT TIEING IN EXHAUST HOODS TO EMCS(2) WALL TYPE REFRIGERATORS(3) WALK IN (1) FREEZER 0 F(1) DAIRY 42 F(1) PRODUCE 35 F(2)BREAD/PASTRY OVENS ELECTNATURAL GAS GRILLSFRYER(2) LOCHINVAR HW HEATERS ELECTGS&R 2(5) HP MOTORS HWP 1&2TIMECLOCKS-ALL GREEN PEGSUH-1,2&3 IN CRAWL SPACES UH-1 : 4654 BTUH UH-2,3:15650 BTUH

**FILE: 10550AH1**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10550

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10550AH5

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU5</b>	AHU NO.	<b>ATTIC</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>WARE WASH</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.				MODEL	
3.0	SUPPLY FAN HP				MFG.				MODEL
3.0	RET/EXH FAN HP				MFG.				MODEL
3145	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	% HTG AREA SERVED	
COMMENT:									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	400	400	400	400	400	400	400				
REQUIRED STOP TIME	1930	1930	1930	1930	1930	1930	1930				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10550

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10550AH2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU2</b>	AHU NO.	<b>ATTIC</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>ADMIN,CORR.,FD PREP,DRY S</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
5.0	SUPPLY FAN HP			MFG.					MODEL
3.0	RET/EXH FAN HP			MFG.					MODEL
5265	CFM-HTG		CFM-CLG	25%	MIN %OA	100%	MAX %OA		% HTG AREA SERVED
COMMENT: .17									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME		400	400	400	400	400	400	400				
REQUIRED STOP TIME		1930	1930	1930	1930	1930	1930	1930				
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>Y</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>N</b> EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10550

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10550AH3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU3	AHU NO.	ATTIC	LOCATION (RM)
	REF. SYS. SERVING AHU	FULL SERV, SHORT ORDER, CO	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

				MFG.				MODEL
5.0	SUPPLY FAN HP			MFG.				MODEL
5.0	RET/EXH FAN HP			MFG.				MODEL
4670	CFM-HTG		CFM-CLG	100% MIN %OA	100% MAX %OA		% HTG AREA SERVED	
COMME IN WINTER 4670 CFM WITH EXHAUST HOODS ON, 2335 CFM WITH EXHAUST HOODS OFF								• 15

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

OPERATION											
HOURS ON:	S		M	T	W	T	F	S	COMMENTS		
PRESENT START TIME	0		0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME	2400		2400	2400	2400	2400	2400	2400			
REQUIRED START TIME	400		400	400	400	400	400	400			
REQUIRED STOP TIME	1930		1930	1930	1930	1930	1930	1930			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT ("F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS ("F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	Y EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				
COMMENTS:					

FILE: **10550AH4**

CONTROLS									
		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10550

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10550AH6

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU6</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>MER AND ELECT RM</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
1.0	SUPPLY FAN HP				MFG.					MODEL
3.0	RET/EXH FAN HP				MFG.					MODEL
600	CFM-HTG		CFM-CLG	0%	MIN %OA	0%	MAX %OA	-	% HTG AREA SERVED	

COMMENT: 1 AIR INTAKE FAN FOR MECH ROOM 3000 CFM 100% O.A.

1 AIR EXHAUST FAN FOR MERCH ROOM 3000 CFM

IN. AND EX. FANS NOT CONNECTED TO AHU-6

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	400	400	400	400	400	400	400				
REQUIRED STOP TIME	1930	1930	1930	1930	1930	1930	1930				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	<b>N</b> MIN OA (Y/N)	<b>N</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>N</b> EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				
COMMENTS:	100% RETURN AIR				

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10550

EMC NO.: 1406-006

DATE: DEC-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10550HE1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW		HTHW/HW		HTHW/STM	X	OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW		OTHER		1.5		USE:
COMMENT: HTHW-40%GLYCOL SOLN								% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.		MODEL	1506400	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
2	HW PUMP 1 - HP	GE 230 208/3/60	MFG.	1725 RPM HE-1	MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

OPERATION:											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	400	400	400	400	400	400	400				
REQUIRED STOP TIME	1930	1930	1930	1930	1930	1930	1930				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10550

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10550RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD-1</b>	PER RAD NO.		LOCATION (RM)
	SOURCE OF HEATING	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM	X	HW		ELECTRIC			
	OTHER							
	COMMENT:							

**NAMEPLATE:**

2	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
	HW PUMP 4 - HP		MFG.		MODEL
COMMENT:					100.0% % AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	400	400	400	400	400	400	400				
REQUIRED STOP TIME	1930	1930	1930	1930	1930	1930	1930				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:					

**FIELD SURVEY NOTES**

**BUILDING 10630**

TYPICAL: 119, 174, 4410, 4420, 4430, 4400, 10100, 10110,  
10120, 10130, 10200, 10210, 10220, 10230,  
10400, 10410, 10420, 10500, 10520,  
10510, 10610, 10620, 10640

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10630

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10630BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10630

BLDG NAME: BN HQ BUILDING

ZONE NO.	1	FUNCTION:	ENTIRE BUILDING					
OCCUPANCY HOURS:	M-F	600	TO	1700	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF	1 PERSON IN BUILDING ON WEEKENDS			
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.		FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.		FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

REMARKS: ADDITIONAL EXHAUST FAN LOAD OF APPROX. 3 TOTAL HP.

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10630 BN HQ

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10630AH1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU1</b>	AHU NO.	<b>MECH. ROOM</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>WHOLEBLDG</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

TRANE				MFG.	CCDB03AL04				MODEL	
2.0	SUPPLY FAN HP		MAGNETEK		MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
1230	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	85.7%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1700	1700	1700	1700	1700	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	<b>X</b>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	<b>72</b>	OCC HEAT	<b>72</b> UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	<b>55</b> COLD DECK	<b>55</b> MIXED AIR	OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>N</b> RA (Y/N)	<b>Y</b> EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:		(Y = YES ; N = NO)				
COMMENTS:	<b>40% GLYCOL</b>					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10630 BN. HQ.

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10630AH2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU2</b>	AHU NO.	<b>MECH. ROOM</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>WHOLEBLDG</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

TRANE				MFG.	CCDB03ALOH				MODEL	
1.0	SUPPLY FAN HP		MAGNETEK		MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
210	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	14.3%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1700	1700	1700	1700	1700	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	0	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS: 40% GLYCOL									

**FILE: 10630HE1**

CONTROLS:									
	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		PSIG		HW SUPPLY					
RESET CONTROL (oF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)		OTHER					
COMMENTS:									



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10630 BN. HQ.

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10630HE2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE2	BOILER/CONVERTER NO.	MER	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	AHUS	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X	HTHW/HW	OTHER	CONVERTER TYPE:
X	SPACE HEAT	DHW	OTHER	USE:
COMME	AHUS	80%	% HTG AREA SERVED	
				BB RADIATION ONLY

**NAMEPLATE:**

B&G	MFG.	HTP2-29/Q88171	MODEL	111700	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
0.75	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	600	600	600	600	600	0				
REQUIRED STOP TIME	0	1700	1700	1700	1700	1700	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

## **FIELD SURVEY NOTES**

### **BUILDING 10632**

TYPICAL: 30, 173, 175, 4412, 4414, 4422, 4432, 10112, 10114,  
10122, 10124, 10132, 10134, 10212, 10214, 10222,  
10224, 10232, 10234, 10412, 10414, 10422,  
10512, 10514, 10522, 10524, 10612,  
10614, 10622, 10632, 10642, 10644,

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10632 BARRACKS

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10632BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10632 BLDG NAME: ENL. PERS. BRKS.

ZONE NO.	1	FUNCTION: CA&S				
OCCUPANCY HOURS:	M-F	500	TO	1800	SAT	0 TO 0
	SUN	0	TO	0		
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF		
	SUMMER OCC	øF	UNOCC	øF		

ZONE NO.	2	FUNCTION: ENL. PERS. BARKS.				
OCCUPANCY HOURS:	M-F	0	TO	2400	SAT	0 TO 2400
	SUN	0	TO	2400		
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF		
	SUMMER OCC	øF	UNOCC	øF		

ZONE NO.		FUNCTION:				
OCCUPANCY HOURS:	M-F		TO		SAT	TO
	SUN		TO			
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF		
	SUMMER OCC	øF	UNOCC	øF		

REMARKS: TYPICAL QUARTERS:

3 SETS OF FLOR. LIGH (6 BULB TOTAL)

TV

VCR

SMALL REFRIG

IRON

ROOM FAN

LAUNDRY ROOM ON EACH FLOOR

4 DRYERS

4 WASHERS

52 HP TOTAL FAN LOAD (NOT INCLUDING SUPPLY FANS FOR AHU'S).

FILE: 10632A10

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 10632A11

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: **10632AH1-4**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)		RA (Y/N)		EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10632 BARRACKS

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10632A5

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU5</b>	AHU NO.	<b>MECH. ROOM</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>ENL. PER BRKS.</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR	<b>X</b>	H&V
	MULTIZONE		DOUBLE DT		REHEAT		INDUCTION		VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**NAMEPLATE:**

					MFG.				MODEL
<b>1.0</b>	SUPPLY FAN HP				MFG.				MODEL
	RET/EXH FAN HP				MFG.				MODEL
<b>1230</b>	CFM-HTG		CFM-CLG	<b>33%</b>	MIN %OA	<b>100%</b>	MAX %OA	<b>10.0%</b>	% HTG AREA SERVED
	COMMENT:								

**COILS:**

<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	<b>X</b>	HW		ELEC	<b>X</b>	MOD VLV	HEATING
<b>X</b>	NONE		STM		HW		ELEC		MOD VLV	REHEAT
<b>X</b>	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
<b>X</b>	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	<b>COMMENTS</b>	
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK				
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL		
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER		
DAMPER CONTROL:	<b>Y</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>N</b>	EA (Y/N)		
		MA CONTROL	<b>X</b>	ECONO-DB		ECONO-ENT		OTHER		
DEMAND LIMIT:	<b>N</b>	(Y = YES ; N = NO)								
COMMENTS:										

FILE: **10632A6**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS		
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK				
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL			
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER			
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)
		MA CONTROL	X	ECONO-DB	ECONO-ENT	OTHER		
DEMAND LIMIT:	N	( Y = YES ; N = NO )						
COMMENTS:								



FILE: 10632A7

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 10632A8

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 10632A9**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	X	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10632 BARRACKS

EMC NO.: 1406-006

DATE: 09-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10632DW1

**DOMESTIC HW SURVEY OBSERVATIONS**

<b>DHW1&amp;2</b>	BOILER/CONVERTER NO.	MECH. ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)		SERVES AREA

**UNIT TYPE:**

NO.2 OIL	NO.6 OIL	N.GAS	X	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM		OTHER	CONVERTER TYPE:

COMMENT:

**NAMEPLATE:**

LOCHINVAR	MFG.	HGX15-052	MODEL	102450	CAPACITY OUTPUT (BTUH,KW)
				30 KW TOTA	
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)

DOMESTIC HW CIRCULATION PUMP:

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

**FILE: 10632DW3**

CONTROLS:									
		PNEUMATIC	X	ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS				HW SUPPLY					
COMMENTS:									

**FILE: 10632HE1**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

**FILE: 10632HE2**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

**FIELD SURVEY NOTES**

**BUILDING 10670**

TYPICAL: 10170, 10270, 10470, 10480, 10570, 10580,  
10660, 10680, 4475, 4485, 4486



**EMC ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

EMC NO.: 1406-006

DATE: 11/17/94

PREPARED BY: BG

CHECKED BY:

BLDG: 10670 VEH MAINT

FILE: FD10670A

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10670

BLDG NAME: VEHICLE MAINTENANCE

ZONE NO.	A	FUNCTION: VEHICLE MAINTENANCE WING							
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	65.0 °F		UNOCC	65.0 °F				
	SUMMER OCC	°F		UNOCC	°F				

ZONE NO.	B	FUNCTION: ADMIN/OFFICES							
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	70.0 °F		UNOCC	70.0 °F				
	SUMMER OCC	°F		UNOCC	°F				

ZONE NO.	C	FUNCTION: VEHICLE MAINTENANCE WING							
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	65.0 °F		UNOCC	65.0 °F				
	SUMMER OCC	°F		UNOCC	°F				

REMARKS: TIME CLOCK NOT FUNCTIONAL / ALL GREEN PEGS - 24 HOUR OPERATION

IN MECH ROOM: INGERSOLL- RAND COMPRESSOR MODEL NUMBER 2-30 TA30

2X30 HP MOTORS - MARATHON ELECTRIC

WEATHERFORD WATER JETTING SYSTEM - 10 HP

TOTAL FAN LOAD NOT INCLUDING THE HEATING AND VENTILATION INTERLOCKS IS  
APPROX. 140 HP.

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10670 VEH MAINT

EMC NO.: 1406-006

DATE: 11/17/94

PREPARED BY: BG

CHECKED BY:

FILE: FD10670A

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10670

BLDG NAME: VEHICLE MAINTENANCE

ZONE NO.	D	FUNCTION: OFFICES / ADMINISTRATION							
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	72.0	øF	UNOCC	72.0	øF			
	SUMMER OCC		øF	UNOCC		øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO		
	SUN		TO						
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO		
	SUN		TO						
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

REMARKS: TIME CLOCK NOT FUNCTIONAL / ALL GREEN PEGS - 24 HOUR OPERATION

IN MECH ROOM: INGERSOLL- RAND COMPRESSOR MODEL NUMBER 2-30 TA30  
2X30 HP MOTORS - MARATHON ELECTRIC  
WEATHERFORD WATER JETTING SYSTEM - 10 HP

**FILE: 10670HS1**

## SERVES AREA

**USE:**

BB RADIATION ONLY

## MODEL

**COMMENT:**

## 1

COMMENTS:



**FILE: 10670HS3**

## SERVES AREA

**USE:**

BB RADIATION ONLY

## MODEL

**COMMENT:**

## OTHER

**COMMENTS:**

FILE: 10670HV1

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
<b>COMMENTS:      130 INLET TEMP. 90 OUTLET TEMP</b>									

**FILE: 10670HV2**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 10670HV3

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									



**FILE: 10670HV4**

	<b>X</b>	<b>PNEUMATIC</b>		<b>ELECTRIC</b>		<b>ELEC'NIC</b>		<b>DDC</b>	<b>COMMENTS</b>
<b>THERMOSTAT TYPE:</b>		<b>SINGLE STPT</b>		<b>DUAL SETPNT</b>		<b>SETBACK</b>			
<b>SPACE SETPOINT (°F):</b>		<b>OCC HEAT</b>		<b>UNOCC HEAT</b>		<b>OCC COOL</b>		<b>UNOCC COOL</b>	
<b>OTHER SETPOINTS (°F):</b>		<b>HOT DECK</b>		<b>COLD DECK</b>		<b>MIXED AIR</b>		<b>OTHER</b>	
<b>DAMPER CONTROL:</b>	<b>N</b>	<b>MIN OA (Y/N)</b>	<b>Y</b>	<b>MAX OA (Y/N)</b>	<b>Y</b>	<b>RA (Y/N)</b>	<b>Y</b>	<b>EA (Y/N)</b>	
		<b>MA CONTROL</b>	<b>Y</b>	<b>ECONO-DB</b>		<b>ECONO-ENT</b>		<b>OTHER</b>	
<b>DEMAND LIMIT:</b>	<b>N</b>	<b>( Y = YES ; N = NO )</b>							
<b>COMMENTS:</b>									

FILE: 10670HW1

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	130 HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						



FILE: 10670HW3

## SERVES AREA

## BB RADIATION ONLY

COMMENT:

**COMMENTS:**

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10670 VEH MAINT

EMC NO.: 1406-006

DATE: 10/17/94

PREPARED BY: BG

CHECKED BY:

FILE: 10670MA1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

MAU-1	AHU NO.	MECH. ROOM	LOCATION (RM)
	REF. SYS. SERVING AHU	A-WING	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

TRANE	MFG.	MODEL
15.0 SUPPLY FAN HP	MAGNETEK	MFG.
RET/EXH FAN HP	MFG.	MODEL
18150 CFM-HTG	CFM-CLG	100% MIN %OA
		100% MAX %OA
COMMENT:	1510.3 MBH	6% HTG AREA SERVED

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	24	24	24	24	24	24	24	YES
REQUIRED START TIME								
REQUIRED STOP TIME								
MONTHS ON:	J	F	M	A	M	J	J	A
	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	EA (Y/N)
		MA CONTROL	Y	ECONO-DB	ECONO-ENT	OTHER
DEMAND LIMIT:	N	(Y = YES ; N = NO)				
COMMENTS:						

FILE: 10670MA2

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS	
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK			
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL		
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER		
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	EA (Y/N)
		MA CONTROL	Y	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )					
COMMENTS:							

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10670 VEH MAINT

EMC NO.: 1406-006

DATE: 10/17/94

PREPARED BY: BG

CHECKED BY:

FILE: 10670MA3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

MAU-3	AHU NO.	MECH. ROOM	LOCATION (RM)
	REF. SYS. SERVING AHU	A-WING	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	1408 MBH			

**NAMEPLATE:**

TRANE	MFG.	MODEL
15.0 SUPPLY FAN HP	MAGNETEK	MFG.
RET/EXH FAN HP	MFG.	MODEL
16920 CFM-HTG	CFM-CLG	100% MIN %OA
		100% MAX %OA
		% HTG AREA SERVED
COMMENT:		

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	YES
REQUIRED START TIME								
REQUIRED STOP TIME								
MONTHS ON:	J	F	M	A	M	J	J	A
	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	EA (Y/N)
		MA CONTROL	Y	ECONO-DB	ECONO-ENT	OTHER
DEMAND LIMIT:		(Y = YES ; N = NO)				
COMMENTS:		122 INLET TEMP, 72 OUTLET TEMP				

**FILE: 10670MA4**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	EA (Y/N)
		MA CONTROL	Y	ECONO-DB	ECONO-ENT	OTHER
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:	<b>130 INLET TEMP, 90 OUTLET TEMP</b>					



**FILE: 10670MA5**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: 10670MA6

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS	
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK			
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL		
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER		
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	EA (Y/N)
		MA CONTROL	Y	ECONO-DB		ECONO-ENT	OTHER
DEMAND LIMIT:		( Y = YES ; N = NO )					
COMMENTS:							

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10670 VEH MAINT

EMC NO.: 1406-006

DATE: 11/17/94

PREPARED BY: BG

CHECKED BY:

FILE: 10670MA67

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

MAU-7	AHU NO.	MECH. ROOM	LOCATION (RM)
	REF. SYS. SERVING AHU	REPAIR BAYS&SMF&HHC	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

TRANE	MFG.	MODEL
7.5 SUPPLY FAN HP	MAGNETEK	MFG.
RET/EXH FAN HP	MFG.	MODEL
6840 CFM-HTG	CFM-CLG	100% MIN %OA
		100% MAX %OA
COMMENT:	569.2 MBH	% HTG AREA SERVED

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X	HW	ELEC	X
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	YES
REQUIRED START TIME								
REQUIRED STOP TIME								
MONTHS ON:	J	F	M	A	M	J	J	A
	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)
		MA CONTROL	Y	ECONO-DB	ECONO-ENT	OTHER
DEMAND LIMIT:		(Y = YES ; N = NO)				
COMMENTS:						

# E M C ENGINEERS, INC.

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10670

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 10670XP1

## BOILER & CONVERTER SURVEY OBSERVATIONS

HTP1	BOILER/CONVERTER NO.	SIGNAL BN	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

## UNIT TYPE:

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW		OTHER				USE:
COMMENT:		MBH 3587		200 GPM 1750 RPM		24% <sub>9</sub>		% HTG AREA SERVED	
				40% GLYCOL				BB RADIATION ONLY	

## NAMEPLATE:

B&G	MFG.	MODEL	3587000	CAPACITY OUTPUT (BTUH)
				CAPACITY INPUT (BTUH)
	MFG.	MODEL		CAPACITY OUTPUT (BTUH)
				CAPACITY INPUT (BTUH)
5	HW PUMP 1 - HP	U.S. ELECTRIC	MFG.	MODEL
	HW PUMP 2 - HP		MFG.	MODEL
	HW PUMP 3 - HP		MFG.	MODEL
COMMENT: ONE BACKUP				

## OPERATION:

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

## CONTROLS:

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	200	HW SUPPLY		
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					



	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	200 HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

**FIELD SURVEY NOTES**

BUILDING 10710

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10710

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10710BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10710

BLDG NAME: FIRESTATION

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F	0	TO	2400	SAT	0	TO	2400
	SUN	0	TO	2400				
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

ZONE NO.	FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	øF	UNOCC	øF				
	SUMMER OCC	øF	UNOCC	øF				

REMARKS:



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10710

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10710C1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

C1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM		PSIG		HW		TEMP.		BOILER TYPE:
NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
1 SPACE HEAT		DHW		OTHER				USE:
COMMENT:						100% % HTG AREA SERVED		
						BB RADIATION ONLY		

**NAMEPLATE:**

	MFG.		MODEL	226000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
0.5	HW PUMP 1 - HP		MFG.		MODEL
0.5	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL
COMMENT:					

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FILE: 10710HV1**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10170

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10170RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

<b>RAD</b>	<b>PER RAD NO.</b>	<b>WHOLE BLDG</b>	<b>LOCATION (RM)</b>
	<b>SOURCE OF HEATING</b>		<b>SERVES AREA</b>

**UNIT TYPE:**

<input type="checkbox"/>	<b>STEAM</b>	<input checked="" type="checkbox"/>	<b>HW</b>	<input type="checkbox"/>	<b>ELECTRIC</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<b>OTHER</b>							
<input type="checkbox"/>	<b>COMMENT:</b>							

**NAMEPLATE:**

<input type="checkbox"/>	<b>HW PUMP 1 - HP</b>	<input type="checkbox"/>	<b>MFG.</b>	<input type="checkbox"/>	<b>MODEL</b>
<input type="checkbox"/>	<b>HW PUMP 2 - HP</b>	<input type="checkbox"/>	<b>MFG.</b>	<input type="checkbox"/>	<b>MODEL</b>
<input type="checkbox"/>	<b>HW PUMP 3 - HP</b>	<input type="checkbox"/>	<b>MFG.</b>	<input type="checkbox"/>	<b>MODEL</b>
<input type="checkbox"/>	<b>HW PUMP 4 - HP</b>	<input type="checkbox"/>	<b>MFG.</b>	<input type="checkbox"/>	<b>MODEL</b>
<input type="checkbox"/>	<b>COMMENT:</b>			<b>100.0%</b>	<b>% AREA HEATING</b>

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	0	0	0	0	0	0			
REQUIRED STOP TIME		2400	2400	2400	2400	2400	2400	2400			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

<input type="checkbox"/>	<input type="checkbox"/>	<b>PNEUMATIC</b>	<input type="checkbox"/>	<b>ELECTRIC</b>	<input type="checkbox"/>	<b>ELEC'NIC</b>	<input type="checkbox"/>	<b>DDC</b>	<b>COMMENTS</b>
<b>RADIATION CONTROL:</b>		<b>NONE</b>		<b>2-WAY VLV</b>		<b>3-WAY VLV</b>		<b>OTHER</b>	
<b>SPACE SETPOINT (øF):</b>		<b>OCC HEAT</b>		<b>UNOCC HEAT</b>		<b>OCC COOL</b>		<b>UNOCC COOL</b>	
<b>RESET CONTROL (øF):</b>		<b>HW HIGH</b>		<b>HW LOW</b>		<b>OA LOW</b>		<b>OA HIGH</b>	
<input type="checkbox"/>	<b>COMMENTS:</b>								

**FIELD SURVEY NOTES**

BUILDING 10715

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10715

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10715BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10715

BLDG NAME: LEA

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F	0	TO	2400	SAT	0	TO	2400
		SUN	0	TO	2400				
PRESENT TEMP	WINTER OCC	68.0 øF			UNOCC	50.0 øF			
	SUMMER OCC	68.0 øF			UNOCC	50.0 øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F	600	TO	1800	SAT	0	TO	0
		SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	68.0 °F			UNOCC	50.0 °F			
	SUMMER OCC	68.0 °F			UNOCC	50.0 °F			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F	700	TO	1800	SAT	0	TO	0
		SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	68.0 øF			UNOCC	50.0 øF			
	SUMMER OCC	68.0 øF			UNOCC	50.0 øF			

REMARKS: TRACER BLDG

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10715

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10715AC1

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACU-1	CHILLER/COMPRESSOR NO.	MER	LOCATION (RM)
		COMPUTER ROOM	

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		DIPATCH / ALARM
	ABSORBTION WITH WATER SIDE COOLING TOWER		CFM 1250
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					1.84 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS		AMPS	PH	HZ
					HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS		AMPS	PH	HZ
					HP
COMMENTS: PACKAGE 32.2 MBH COOLING, 22.1 MBH REHEAT					

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME								TIMECLOCK?
PRESENT STOP TIME								
REQUIRED START TIME								
REQUIRED STOP TIME								
MONTHS ON:								
J	F	M	A	M	J	J	A	S
0	0	0	0	1	1	1	1	0
								0
								0

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS					
- PRESSURE	LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES		
- OTHER					
COMMENTS: 22.1 MBH REHEAT					
COOLING SECTION EAT 72 F					
LAT 55 F					

**FILE: 10715HV1**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 10715HV2**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10715

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10715HV3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

HVU-3	AHU NO.		ATTIC	LOCATION (RM)
	REF. SYS. SERVING AHU		SECOND FLOOR	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

20.0	SUPPLY FAN HP		MFG.		MODEL
	RET/EXH FAN HP		MFG.		MODEL
9040	CFM-HTG	CFM-CLG	MFG.		MODEL
			11% MIN %OA	100% MAX %OA	50.0% % HTG AREA SERVED
	COMMENT:				

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):	HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	Y EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	(Y = YES ; N = NO)				
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10715

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10715HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	PERIM. HEATING FOR BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X	HTHW/STM	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT:				100% % HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

MFG.	MODEL	960000	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
3 HW PUMP 1 - HP	MFG.		MODEL
3 HW PUMP 2 - HP	MFG.		MODEL
HW PUMP 3 - HP	MFG.		MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10715

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10715HX2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX2	BOILER/CONVERTER NO.	MER	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	VENTILATION	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X	HTHW/HW	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT:			% HTG AREA SERVED	
			BB RADIATION ONLY	

**NAMEPLATE:**

MFG.	MODEL	841800	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
10 HW PUMP 1 - HP	MFG.		MODEL
10 HW PUMP 2 - HP	MFG.		MODEL
HW PUMP 3 - HP	MFG.		MODEL
COMMENT:			

**OPERATION:**

HOURS ON:			S	M	T	W	T	F	S	COMMENT	
PRESENT START TIME			0	0	0	0	0	0	0	TIMECLOCK?	
PRESENT STOP TIME			2400	2400	2400	2400	2400	2400	2400		
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10715

EMC NO.: 1406-006

DATE: 17-NOV-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10715HX3

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX3	BOILER/CONVERTER NO.	MER	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	DOMESTIC H.W.	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N GAS	ELEC	FUELS:
STM/HW	X HTHW/HW	HTHW/STM	OTHER	CONVERTER TYPE:
SPACE HEA	X DHW	OTHER		USE:
COMMENT:				% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

MFG.	MODEL	101000	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
HW PUMP 1 - HP	MFG.		MODEL
HW PUMP 2 - HP	MFG.		MODEL
HW PUMP 3 - HP	MFG.		MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 10730

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: MAIN EXCHANGE

EMC NO.: 1406-006

DATE: Feb-95

PREPARED BY: CSW/BG

CHECKED BY: BG

FILE: 10730BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10730 BLDG NAME: MAIN EXCHANGE

ZONE NO.	1	FUNCTION: MAIN STORE						
OCCUPANCY HOURS:	M-F	1000	TO	2000	SAT	1000	TO	2000
	SUN	1100	TO	1800				
PRESENT TEMP	WINTER OCC	68.0 øF		UNOCC	50.0 øF			
	SUMMER OCC	68.0 øF		UNOCC	50.0 øF			

ZONE NO.		2	FUNCTION: CLOTHING STORE						
OCCUPANCY HOURS:		M-F	1000	TO	1800	SAT	1000	TO	1700
		SUN	1100	TO	1600				
PRESENT TEMP	WINTER OCC		68.0 øF		UNOCC	50.0 øF			
	SUMMER OCC		68.0 øF		UNOCC	50.0 øF			

ZONE NO.	3	FUNCTION: FOOD COURT						
OCCUPANCY HOURS:	M-F	1030	TO	1900	SAT	1100	TO	1800
	SUN	1100	TO	1800				
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF			
	SUMMER OCC	øF		UNOCC	øF			

REMARKS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10730

BLDG NAME: EXCHANGE MAIN RETAIL

ZONE NO.	FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO
	SUN		TO				
PRESENT TEMP	WINTER OCC		øF	UNOCC	øF		
	SUMMER OCC		øF	UNOCC	øF		

ZONE NO.	FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO
	SUN		TO				
PRESENT TEMP	WINTER OCC		øF	UNOCC	øF		
	SUMMER OCC		øF	UNOCC	øF		

ZONE NO.	FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO
	SUN		TO				
PRESENT TEMP	WINTER OCC		øF	UNOCC	øF		
	SUMMER OCC		øF	UNOCC	øF		

REMARKS: RELIEF FAN TOTAL POWER: 5.75 HP  
EXHASUT FAN TOTAL POWER: 2.4 HP  
UNIT HEATER TOTAL CAPACITY: 528.2 MBH  
VAV HEATING COIL TOTAL CAPACTIY: 279.7 MBH

**SCHEDULE OR CONDESING UNITS FOR REFRIGERATED ROOMS**

NO.	CAP. (BTUH)	POW, (W)
RCU1	6304	1840
RCU2	9261	3818
RCU3	8859	3818

**SCHEDULE OF UNIT COOLERS**

NO.	LOCATION	BTU/H	WATTS
UC1	ROOM 413	6304	196
UC2	ROOM 414	9201	2933
UC3	ROOM 415	8859	2933

**REFRIGERANT TO WATER HEAT EXCHANGERS**

NO	BTU/H	WATTS
RWH1	20000	1080
RWH2	20000	1080

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730AH8

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU8	AHU NO.	MECH ROOM	LOCATION (RM)
CH1,2	REF. SYS. SERVING AHU	MCSS SALES	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

					MFG.					MODEL
7.5	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
4600	CFM-HTG	4600	CFM-CLG	12%	MIN %OA	70%	MAX %OA	10.0%	% HTG AREA SERVED	
COMME										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE		DX	X	CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK		
SPACE SETPOINT (°F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	COLD DECK	MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	EA (Y/N)
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	(Y = YES ; N = NO)				
COMMENTS:	HEATING COIL CAPACITY: 111.1 MBH					
	COOLING COIL CAPACITY: 214 MBH					



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730AH1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU1</b>	AHU NO.	<b>MECH ROOM</b>	LOCATION (RM)
<b>CH1,2</b>	REF. SYS. SERVING AHU	<b>SALES</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL	
30.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
19350	CFM-HTG	19350	CFM-CLG	17%	MIN %OA	100%	MAX %OA		% HTG AREA SERVED	
COMME MIN CFM 3290										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	<b>X</b> CW		<b>X</b> MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: HEATING COIL CAPACITY: 595 MBH									
COOLING COIL CAPACITY: 870 MBH									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730AH2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU2	AHU NO.	MECH ROOM	LOCATION (RM)
CH1,2	REF. SYS. SERVING AHU	MPA	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
7800	CFM-HTG	7800	CFM-CLG	18%	MIN %OA	100%	MAX %OA		% HTG AREA SERVED	
COMME										

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X	HW	X	MOD VLV HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	X	CW	X	MOD VLV COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:		HEATING COIL CAPACITY: 323.5 MBH							
		COOLING COIL CAPACITY: 199.6 MBH							

**FILE: 10730AH3**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									
COOLING COIL CAPACITY: 120.5 MBH									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730AH4

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU4</b>	AHU NO.	<b>MECH ROOM</b>	LOCATION (RM)
<b>CH1,2</b>	REF. SYS. SERVING AHU	<b>FAST FOOD</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL	
10.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
7480	CFM-HTG	7480	CFM-CLG	6%	MIN %OA	97%	MAX %OA		% HTG AREA SERVED	
COMME										

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
	NONE	DX	<b>X</b> CW		<b>X</b> MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	HEATING COIL CAPACITY: 189.4 MBH								
	COOLING COIL CAPACITY: 120.5 MBH								

FILE: **10730AH5**

CONTROLS								COMMENTS	
	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>Y</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>Y</b>	RA (Y/N)	<b>Y</b>	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	<b>N</b>	( Y = YES ; N = NO )							
COMMENTS:									
COOLING COIL CAPACITY: 307.1 MBH									

FILE: **10730AH6**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS		
THERMOSTAT TYPE:		SINGLE STPT	DUAL SETPNT	SETBACK				
SPACE SETPOINT (*F):		OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL			
OTHER SETPOINTS (*F):		HOT DECK	COLD DECK	MIXED AIR	OTHER			
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	EA (Y/N)	
		MA CONTROL	ECONO-DB	ECONO-ENT	OTHER			
DEMAND LIMIT:	N	( Y = YES ; N = NO )						
COMMENTS:	HEATING COIL CAPACITY: 30.7 MBH							
	COOLING COIL CAPACITY: 71 MBH							

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730AH7

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU7	AHU NO.	MECH ROOM	LOCATION (RM)
CH1,2	REF. SYS. SERVING AHU	BARBER	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:				

**NAMEPLATE:**

				MFG.					MODEL	
2.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
900	CFM-HTG	1000	CFM-CLG	11%	MIN %OA	100%	MAX %OA	10.0%	% HTG AREA SERVED	
COMME										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE		DX	X	CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME								TIMECLOCK?				
PRESENT STOP TIME												
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: HEATING COIL CAPACITY: 22.45 MBH									
COOLING COIL CAPACITY: 20.9 MBH									

FILE: 10730A10

CONTROLS:									
	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:	HEATING COIL CAPACITY: 65.5 MBH								
	COOLING COIL CAPACITY: 62.7 MBH								



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730A12

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

A1,2	CHILLER/COMPRESSOR NO.	OUTSIDE MECH ROO	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		AC1-10
	ABSORPTION WITH WATER SIDE COOLING TOWER		
X	AIR COOLED CONDENSING UNIT		
	CHW	X	DX
			OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS	AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	22.5 HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		CWS (oF)		CWR (oF)		CNWS (oF)		CNWR (oF)	
PANEL INDICATORS									
- PRESSURE		LITE-HI		LITE-LOW		GAUGES			
- TEMPERATURE		LITE-HI		LITE-LOW		GAUGES			
- OTHER									

COMMENTS:

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE:

Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730C12

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

CH1,2	CHILLER/COMPRESSOR NO.	MECH RM	LOCATION (RM)

**UNIT TYPE:**

	CENTRIFUGAL WITH WATER SIDE COOLING TOWER		OTHER
	RECIPROCATING WITH WATER SIDE COOLING TOWER		AHU'S SERVED
	RECIPROCATING WITH AIR COOLED CONDENSING UNIT		ACC1&2
	ABSORPTION WITH WATER SIDE COOLING TOWER		
	AIR COOLED CONDENSING UNIT		
X	CHW	DX	OTHER

**NAMEPLATE:**

CHILLER	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	190 CAPACITY (TONS)
TOWER	MFG.		MODEL		# OF FANS
	VOLTS	AMPS	PH	HZ	HP each
CW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	HP
CNW PUMP	MFG.		MODEL		SERIAL NO.
	VOLTS	AMPS	PH	HZ	HP

COMMENTS:

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
0	0	0	0	1	1	1	1	1	0	0	0

**CONTROLS:**

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		CWS (oF)	CWR (oF)	CNWS (oF)	CNWR (oF)	
PANEL INDICATORS						
- PRESSURE		LITE-HI	LITE-LOW	GAUGES		
- TEMPERATURE		LITE-HI	LITE-LOW	GAUGES		
- OTHER						

COMMENTS: ACC1&amp;2 REJECT HEAT FROM CHILLERS

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730HE1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE1	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
COGEN PLANT	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							10%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

MFG.	MODEL	2101000	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
10	HW PUMP 1 - HP	MFG.	MODEL
	HW PUMP 2 - HP	MFG.	MODEL
	HW PUMP 3 - HP	MFG.	MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: EXCH MAIN RETAIL

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY: BG

FILE: 10730HE1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE1	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
COGEN PLANT	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X	HTHW/HW	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	OTHER		USE:
COMMENT:			10% % HTG AREA SERVED	
			BB RADIATION ONLY	

**NAMEPLATE:**

MFG.	MODEL	2101000	CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
MFG.	MODEL		CAPACITY OUTPUT (BTUH)
			CAPACITY INPUT (BTUH)
10 HW PUMP 1 - HP	MFG.		MODEL
HW PUMP 2 - HP	MFG.		MODEL
HW PUMP 3 - HP	MFG.		MODEL
COMMENT:			

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME								TIMECLOCK?			
PRESENT STOP TIME											
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**FIELD SURVEY NOTES**

BUILDING 10745

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10745

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY:

FILE: 10745BDS

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10745

BLDG NAME: CHILD SUPPORT CENTER

ZONE NO.	1		FUNCTION: WHOLE BUILDING						
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	0	TO	0	
	SUN	0	TO	0					
PRESENT TEMP	WINTER OCC	74.0 øF		UNOCC	74.0 øF				
	SUMMER OCC	78.0 øF		UNOCC	85.0 øF				

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC	øF			
	SUMMER OCC		øF		UNOCC	øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC	øF		UNOCC	øF				
	SUMMER OCC	øF		UNOCC	øF				

REMARKS:

PROJECT: UMCS STUDY  
CLIENT CONTRACT NO.: DACA01-94-D-0033  
CLIENT PROJ. ENG: STEVE ROWLEY  
LOCATION: FORT DRUM, NY BLDG:

EMC NO.: 1406-006  
DATE: Dec-94  
PREPARED BY: CSW  
CHECKED BY:  
FILE: 10745HX1

## BOILER & CONVERTER SURVEY OBSERVATIONS

HX-1	BOILER/CONVERTER NO.	MECH ROOM	LOCATION (RM)
COGEN PLANT	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

## UNIT TYPE:

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
X	SPACE HEA	X	DHW		OTHER				USE:
COMMENT:							26%	% HTG AREA SERVED	
								BB RADIATION ONLY	

## NAMEPLATE:

		MFG.		MODEL	2155000	CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
		MFG.		MODEL		CAPACITY OUTPUT (BTUH)
						CAPACITY INPUT (BTUH)
1	HW PUMP 1 - HP			MFG.		MODEL
1	HW PUMP 2 - HP			MFG.		MODEL
	HW PUMP 3 - HP			MFG.		MODEL
COMMENT:						

## OPERATION:

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	0	0	0	0	0	0				
REQUIRED STOP TIME	2400	2400	2400	2400	2400	2400	2400				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

## CONTROLS:

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		PSIG	HW SUPPLY			
RESET CONTROL (oF):		HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)	OTHER			
COMMENTS:						

FILE: 10745HV1

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10745

EMC NO.: 1406-006

DATE: Dec-94

PREPARED BY: CSW

CHECKED BY:

FILE: 10745HV2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

HV-2	AHU NO.	MECH ROOM	LOCATION (RM)
	REF. SYS. SERVING AHU		SERVES AREA

**UNIT TYPE:**

	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL	
1.5	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
2400	CFM-HTG		CFM-CLG		MIN %OA		MAX %OA		% HTG AREA SERVED	
COMMENT:										

**COILS:**

	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
	NONE		STM		HW		ELEC		MOD VLV	REHEAT
	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	700	700	700	700	700	0				
REQUIRED STOP TIME	0	1900	1900	1900	1900	1900	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: **10745HV3**

	<b>X</b>	<b>PNEUMATIC</b>		<b>ELECTRIC</b>		<b>ELEC'NIC</b>		<b>DDC</b>	<b>COMMENTS</b>
<b>THERMOSTAT TYPE:</b>		<b>SINGLE STPT</b>		<b>DUAL SETPNT</b>		<b>SETBACK</b>			
<b>SPACE SETPOINT (°F):</b>		<b>OCC HEAT</b>		<b>UNOCC HEAT</b>		<b>OCC COOL</b>		<b>UNOCC COOL</b>	
<b>OTHER SETPOINTS (°F):</b>		<b>HOT DECK</b>		<b>COLD DECK</b>		<b>MIXED AIR</b>		<b>OTHER</b>	
<b>DAMPER CONTROL:</b>	<b>Y</b>	<b>MIN OA (Y/N)</b>	<b>Y</b>	<b>MAX OA (Y/N)</b>	<b>Y</b>	<b>RA (Y/N)</b>	<b>N</b>	<b>EA (Y/N)</b>	
		<b>MA CONTROL</b>		<b>ECONO-DB</b>		<b>ECONO-ENT</b>		<b>OTHER</b>	
<b>DEMAND LIMIT:</b>		<b>( Y = YES ; N = NO )</b>							
<b>COMMENTS:</b>									

FILE: 10745HV4

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**FIELD SURVEY NOTES**

BUILDING 10785

TYPICAL: 4405, 10030

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 10785 BLDG NAME: CHAPEL/CHILD DEVELOP/RELIGIOUS EDUC

ZONE NO.	1	FUNCTION: CHAPEL						
OCCUPANCY HOURS:	M-F	0	TO	0	SAT	0	TO	0
	SUN	830	TO	1300				
PRESENT TEMP	WINTER OCC	70.0 °F	UNOCC	60.0 °F	SEE SCHED BELOW			
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	2	FUNCTION: RELIGIOUS EDUCATION						
OCCUPANCY HOURS:	M-F	600	TO	1800	SAT	0	TO	0
	SUN	0	TO	0				
PRESENT TEMP	WINTER OCC	°F	UNOCC	°F				
	SUMMER OCC	°F	UNOCC	°F				

ZONE NO.	3	FUNCTION:						
OCCUPANCY HOURS:	M-F		TO		SAT		TO	
	SUN		TO					
PRESENT TEMP	WINTER OCC	°F	UNOCC	°F				
	SUMMER OCC	°F	UNOCC	°F				

REMARKS: CHAPEL OPEN ON OCCASION FOR MEMORIALS AND WEDDINGS.  
CHAPEL CHILD CARE IS OPEN TUS & THUS MORNING 0900-1200 AND SUNDAY 0830-1300

PROJECT: UMCS STUDY  
 CLIENT CONTRACT NO.: DACA01-94-D-0033  
 CLIENT PROJ. ENG: STEVE ROWLEY  
 LOCATION: FORT DRUM, NY BLDG: 10785

EMC NO.: 1406-006  
 DATE: 15-NOV-94  
 PREPARED BY: BG  
 CHECKED BY:  
 FILE: 10785DHW

### DOMESTIC HW SURVEY OBSERVATIONS

DHW1	BOILER/CONVERTER NO.	CHAPEL PENTHOUSE	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	CHAPEL	SERVES AREA

### UNIT TYPE:

NO.2 OIL	NO.6 OIL	N.GAS	X	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM		OTHER	CONVERTER TYPE:
COMMENT:					

### NAMEPLATE:

AO SMITH	MFG.	ELJ20913	MODEL	8533	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)
DOMESTIC HW CIRCULATION PUMP:					
HW PUMP 1 - HP			MFG.		MODEL
HW PUMP 2 - HP			MFG.		MODEL
HW PUMP 3 - HP			MFG.		MODEL
COMMENT:					

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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### OPERATION:

OPERATION:											
HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	830	0	900	0	900	0	0				
REQUIRED STOP TIME	1300	0	1200	0	1200	0	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

### CONTROLS:

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS		HW SUPPLY			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785HE1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HE1	BOILER/CONVERTER NO.	MER	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDG	SERVES AREA

**UNIT TYPE:**

	STEAM		PSIG		HW		TEMP.		BOILER TYPE:
	NO.2 OIL		NO.6 OIL		N.GAS		ELEC		FUELS:
	STM/HW	X	HTHW/HW		HTHW/STM		OTHER		CONVERTER TYPE:
X	SPACE HEAT		DHW		OTHER				USE:
COMMENT:							100%	% HTG AREA SERVED	
								BB RADIATION ONLY	

**NAMEPLATE:**

	MFG.		MODEL	2001000	CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH)
					CAPACITY INPUT (BTUH)
	HW PUMP 1 - HP		MFG.		MODEL
	HW PUMP 2 - HP		MFG.		MODEL
	HW PUMP 3 - HP		MFG.		MODEL

COMMENT:

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		830	600	600	600	600	600	0			
REQUIRED STOP TIME		1300	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785RAD

**PERIMETER RADIATION SURVEY OBSERVATIONS**

RAD	PER RAD NO.	LOCATION (RM)
	SOURCE OF HEATING	WHOLE BLDG
		SERVES AREA

**UNIT TYPE:**

STEAM	X	HW	ELECTRIC				
OTHER							
COMMENT:							

**NAMEPLATE:**

HW PUMP 1 - HP		MFG.		MODEL
HW PUMP 2 - HP		MFG.		MODEL
HW PUMP 3 - HP		MFG.		MODEL
HW PUMP 4 - HP		MFG.		MODEL
COMMENT:			100.0%	% AREA HEATING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	830	600	600	600	600	600	0				
REQUIRED STOP TIME	1300	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
RADIATION CONTROL:	NONE	2-WAY VLV	3-WAY VLV	OTHER	
SPACE SETPOINT (øF):	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
RESET CONTROL (øF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
COMMENTS:	14 UNIT HEATERS, 10 CONVECTIVE HEATERS				



FILE: 10785AH1

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 10785AH2**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL :		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785AH3

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU3</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>RELIGIOUS EDUCATI</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

CENTRALAIRE				MFG.	L1715				MODEL
10.0	SUPPLY FAN HP	MARATHON		MFG.					MODEL
7.5	RET/EXH FAN HP	MARATHON		MFG.					MODEL
3500	CFM-HTG		CFM-CLG	19%	MIN %OA	100%	MAX %OA	8.3%	% HTG AREA SERVED
COMMENT:									

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC		MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
X	NONE		DX		CW				MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC		COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK				
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL		
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER		
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)		
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER		
DEMAND LIMIT:		( Y = YES ; N = NO )								
COMMENTS:										

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785AH4

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU4</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>RELIGIOUS EDUCATI</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES		OTHER			
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
5.0	SUPPLY FAN HP			MFG.					MODEL
3.0	RET/EXH FAN HP			MFG.					MODEL
1775	CFM-HTG	CFM-CLG	34%	MIN %OA	100%	MAX %OA	8.3%	% HTG AREA SERVED	
COMMENT:									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME	0	600	600	600	600	600	0				
REQUIRED STOP TIME	0	1800	1800	1800	1800	1800	0				
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
<b>THERMOSTAT TYPE:</b>	SINGLE STPT	DUAL SETPNT	SETBACK		
<b>SPACE SETPOINT (*F):</b>	OCC HEAT	UNOCC HEAT	OCC COOL	UNOCC COOL	
<b>OTHER SETPOINTS (*F):</b>	HOT DECK	COLD DECK	MIXED AIR	OTHER	
<b>DAMPER CONTROL:</b>	<b>Y</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>Y</b> RA (Y/N)	<b>Y</b> EA (Y/N)	
	MA CONTROL	ECONO-DB	ECONO-ENT	OTHER	
<b>DEMAND LIMIT:</b>	(Y = YES ; N = NO)				
<b>COMMENTS:</b>					

FILE: 10785AH5

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785AH6

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU6	AHU NO.	MER	LOCATION (RM)
	REF. SYS. SERVING AHU	CHILD DEVELOPMENT SOUTH	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	X	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
15.0	SUPPLY FAN HP			MFG.					MODEL
7.5	RET/EXH FAN HP			MFG.					MODEL
4850	CFM-HTG		CFM-CLG	21%	MIN %OA	100%	MAX %OA	12.5%	% HTG AREA SERVED
COMMENT:									

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 10785

EMC NO.: 1406-006

DATE: 15-NOV-94

PREPARED BY: BG

CHECKED BY:

FILE: 10785AH7

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>AHU7</b>	AHU NO.	<b>MER</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>CHILD DEVELOPMENT SOUTH</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	<b>X</b>	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION		VAV
	NUMBER OF ZONES	OTHER				
	COMMENT:					

**NAMEPLATE:**

				MFG.					MODEL
15.0	SUPPLY FAN HP			MFG.				MODEL	
7.5	RET/EXH FAN HP			MFG.				MODEL	
1975	CFM-HTG		CFM-CLG	30%	MIN %OA	100%	MAX %OA	12.5%	% HTG AREA SERVED
COMMENT:									

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME		0	600	600	600	600	600	0			
REQUIRED STOP TIME		0	1800	1800	1800	1800	1800	0			
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	0	0	0	0	0	1	1	1

**CONTROLS:**

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 10785AH8

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									





FILE: 10785AH10

		PNEUMATIC		ELECTRIC		ELEC'NIC		DDC		COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK				
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL		
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER		
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)		
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER		
DEMAND LIMIT:		( Y = YES ; N = NO )								
COMMENTS:										

**FIELD SURVEY NOTES**

BUILDING 11050

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: FD11050A

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 11050

BLDG NAME: GUTHRIE CLINIC

ZONE NO.		A		FUNCTION: PATIENT BEDS					
OCCUPANCY HOURS:		M-F	700	TO	1900	SAT	700	TO	1900
		SUN	700	TO	1900				
PRESENT TEMP	WINTER OCC		69.0 øF		UNOCC	69.0 øF			
	SUMMER OCC		øF		UNOCC	øF			

ZONE NO. B		FUNCTION: EMERGENCY						
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900
	SUN	0	TO	2400				
PRESENT TEMP	WINTER OCC	69.0 øF		UNOCC	69.0 øF			
	SUMMER OCC	øF		UNOCC	øF			

ZONE NO.	C	FUNCTION: OPERATING ROOMS							
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	69.0 øF		UNOCC	69.0 øF				
	SUMMER OCC	øF		UNOCC	øF				

REMARKS: TIME CLOCK NOT FUNCTIONAL / ALL GREEN PEGS - 24 HOUR OPERATION

COMP. HP      CND RETURN HP      GLYCOL HP      SYS PMP HP

5	0.333	1.2	2
0.333	0.333	0.25	2
5	0.25	1	2
20	3		
1.5	5		
7.5			

ADDITIONAL  
LOADS

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: FD11050B

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 11050

BLDG NAME: GUTHRIE CLINIC

ZONE NO.	D	FUNCTION: SURGICAL SUITES					
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO 1900
	SUN	700	TO	1900			
PRESENT TEMP	WINTER OCC	69.0 °F	UNOCC	69.0 °F			
	SUMMER OCC	°F	UNOCC	°F			

ZONE NO.	E	FUNCTION: CLINIC NORTH					
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO 1900
	SUN	0	TO	2400			
PRESENT TEMP	WINTER OCC	69.0 °F	UNOCC	69.0 °F			
	SUMMER OCC	°F	UNOCC	°F			

ZONE NO.	F	FUNCTION: CLINIC SOUTH					
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO 1900
	SUN	700	TO	1900			
PRESENT TEMP	WINTER OCC	69.0 °F	UNOCC	69.0 °F			
	SUMMER OCC	°F	UNOCC	°F			

REMARKS: TIME CLOCK NOT FUNCTIONAL / ALL GREEN PEGS - 24 HOUR OPERATION

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: FD11050C

**VI. BUILDING DATA SURVEY OBSERVATIONS**BLDG NO: 11050 BLDG NAME: GUTHRIE CLINIC

ZONE NO.	G	FUNCTION: ADDITION - OFFICES AND STORAGE							
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	69.0	øF	UNOCC	69.0	øF			
	SUMMER OCC		øF	UNOCC		øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO		
	SUN		TO						
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:	M-F		TO		SAT		TO		
	SUN		TO						
PRESENT TEMP	WINTER OCC		øF	UNOCC		øF			
	SUMMER OCC		øF	UNOCC		øF			

REMARKS: TIME CLOCK NOT FUNCTIONAL / ALL GREEN PEGS - 24 HOUR OPERATION

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 11050

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX-1	BOILER/CONVERTER NO.	RM 102	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	BLDG UH/AHU	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X HTHW/HW	HTHW/STM	OTHER	CONVERTER TYPE:
X SPACE HEA	DHW	OTHER		USE:
COMMENT: 170 EWT, 200LWT			20%	% HTG AREA SERVED
GLYCOL HOT WATER FOR ADDITION				BB RADIATION ONLY

**NAMEPLATE:**

MFG.	MODEL	CAPACITY OUTPUT (BTUH)
		CAPACITY INPUT (BTUH)
MFG.	MODEL	CAPACITY OUTPUT (BTUH)
		CAPACITY INPUT (BTUH)
0.75 HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL
COMMENT: SECOND1 HP PUMP AS BACKUP		
PACKAGE CONVERTOR		

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	200 HW SUPPLY			
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 11050

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050HX2

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX-2	BOILER/CONVERTER NO.	MER #4	LOCATION (RM)
COGEN	SOURCE OF HEATING (PLANT)	PHC	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X HTHW/HW	HTHW/STM	OTHER	CONVERTER TYPE:
X SPACE HEA	DHW	OTHER		USE:
COMMENT: 118 EWT, 150 LWT			20%	% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

MFG.	MODEL	CAPACITY OUTPUT (BTUH)
		CAPACITY INPUT (BTUH)
MFG.	MODEL	CAPACITY OUTPUT (BTUH)
		CAPACITY INPUT (BTUH)
1 HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL
COMMENT: SECOND1 HP PUMP AS BACKUP		
PACKAGE CONVERTOR		

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENT		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	200	HW SUPPLY		
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					



	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: **11050HV2**

CONTROLS:									
	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL		ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: **11050AA1**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	60	OCC HEAT	60	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**FILE: 11050AA2**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050 CLINIC

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050AH1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU-1	AHU NO.	MECH. ROOM #3	LOCATION (RM)
CHR1A,B,C	REF. SYS. SERVING AHU	PATIENT BEDS	SERVES AREA

**UNIT TYPE:**

	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT	X	REHEAT		INDUCTION	X	VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**NAMEPLATE:**

TRANE				MFG.					MODEL	
15.0	SUPPLY FAN HP		MARATHON		MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
7645	CFM-HTG	10130	CFM-CLG	46%	MIN %OA	100%	MAX %OA	18.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT		
	NONE	STM	X	HW	ELEC	X	MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT		
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.		
	NONE	DX	X	CW		X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	YES			
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:												
J	F	M	A	M	J	J	A	S	O	N	D	
1	1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050 CLINIC

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050AH2

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU-2	AHU NO.	MECH ROOM #4	LOCATION (RM)
CHR1A,B,C	REF. SYS. SERVING AHU	EMERGENCY	SERVES AREA

**UNIT TYPE:**

	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT	X	REHEAT		INDUCTION	X	VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**NAMEPLATE:**

TRANE				MFG.					MODEL	
4.0	SUPPLY FAN HP		MARATHON		MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
2470	CFM-HTG	3190	CFM-CLG	26%	MIN %OA	100%	MAX %OA	8.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE		DX	X	CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	YES			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

FILE: **11050AH3**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	65	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS: EAT -13 LAT 22 - FOR HEAT RECOVERY COIL.									

FILE: 11050AH4

	X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y DUAL SETPNT	SETBACK		
SPACE SETPOINT (*F):	72	OCC HEAT	72 UNOCC HEAT	72 OCC COOL	72 UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55 COLD DECK	55 MIXED AIR	OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	Y EA (Y/N)	
		MA CONTROL	Y ECONO-DB	ECONO-ENT	OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )				
COMMENTS:						



**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050 CLINIC

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050AH5

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU-5	AHU NO.	MECH. ROOM #1	LOCATION (RM)
CHR1A,B,C	REF. SYS. SERVING AHU	CLINIC NORTH	SERVES AREA

**UNIT TYPE:**

	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT	X	REHEAT		INDUCTION	X	VAV
	NUMBER OF ZONES				OTHER				
	COMMENT:								

**NAMEPLATE:**

TRANE				MFG.					MODEL	
5.0	SUPPLY FAN HP			MARATHON	MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
3720	CFM-HTG	9915	CFM-CLG	25%	MIN %OA	100%	MAX %OA	16.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE		STM		HW		ELEC		MOD VLV	PREHEAT
	NONE		STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE		STM		HW		ELEC		MOD VLV	REHEAT
X	NONE		STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE		DX	X	CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	YES			
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050 CLINIC

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050AH6

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

AHU-6	AHU NO.	MECH. ROOM #1	LOCATION (RM)
CHR1A,B,C	REF. SYS. SERVING AHU	CLINIC SOUTH	SERVES AREA

**UNIT TYPE:**

	SINGLE ZN		2-PIPE FC		4-PIPE FC		UNIT HTR		H&V
	MULTIZONE		DOUBLE DT	X	REHEAT		INDUCTION	X	VAV
	NUMBER OF ZONES			OTHER					
	COMMENT:								

**NAMEPLATE:**

TRANE				MFG.					MODEL	
5.0	SUPPLY FAN HP			MARATHON	MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
11035	CFM-HTG	13685	CFM-CLG	25%	MIN %OA	100%	MAX %OA	25.5%	% HTG AREA SERVED	
COMMENT:										

**COILS:**

X	NONE	STM		HW		ELEC		MOD VLV	PREHEAT
	NONE	STM	X	HW		ELEC	X	MOD VLV	HEATING
X	NONE	STM		HW		ELEC		MOD VLV	REHEAT
X	NONE	STM		HW		EVAP MEDIA		MOD VLV	HUMID.
	NONE	DX	X	CW			X	MOD VLV	COOLING

**OPERATION:**

HOURS ON:		S	M	T	W	T	F	S	COMMENTS		
PRESENT START TIME		0	0	0	0	0	0	0	TIMECLOCK?		
PRESENT STOP TIME		2400	2400	2400	2400	2400	2400	2400	YES		
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	

**CONTROLS:**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
THERMOSTAT TYPE:	N	SINGLE STPT	Y	DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):	72	OCC HEAT	72	UNOCC HEAT	72	OCC COOL	72	UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK	55	COLD DECK	55	MIXED AIR		OTHER	
DAMPER CONTROL:	Y	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

<b>EMC ENGINEERS, INC.</b>				EMC NO.: 1406-006				
PROJECT: UMCS STUDY				DATE: 11/09/94				
CLIENT CONTRACT NO.: DACA01-94-D-0033				PREPARED BY: <b>BG</b>				
CLIENT PROJ. ENG: STEVE ROWLEY				CHECKED BY:				
LOCATION: FORT DRUM, NY				BLDG: <b>11050A</b>		FILE: <b>11050CH</b>		
<b>REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS</b>								
CHR-1A,B,C	CHILLER/COMPRESSOR NO.			MER#1	LOCATION (RM)			
<b>UNIT TYPE:</b>								
CENTRIFUGAL WITH WATER SIDE COOLING TOWER				OTHER				
RECIPROCATING WITH WATER SIDE COOLING TOWER				AHU'S SERVED				
X	RECIPROCATING WITH AIR COOLED CONDENSING UNIT				AHU 1 THRU 6			
ABSORPTION WITH WATER SIDE COOLING TOWER								
AIR COOLED CONDENSING UNIT								
X	CHW	DX	OTHER					
<b>NAMEPLATE:</b>								
CHILLER	TRANE	MFG.	CCACC604NDNGR60	MODEL	SERIAL NO.			
460	VOLTS	150	AMPS	3	PH	60	HZ	
54.4				CAPACITY (TONS)				
TOWER	MFG.			MODEL	# OF FANS			
VOLTS	AMPS	PH	HZ	HP each				
CW PUMP	MFG.			MODEL	SERIAL NO.			
VOLTS	AMPS	PH	HZ	2 HP				
CNW PUMP	MFG.			MODEL	SERIAL NO.			
VOLTS	AMPS	PH	HZ	HP				
COMMENTS:		BELOW 55 DEGREES ECONIMIZE						
<b>OPERATION:</b>								
HOURS ON:	S	M	T	W	T	F	S	COMMENT
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400	
REQUIRED START TIME								
REQUIRED STOP TIME								
MONTHS ON:	J	F	M	A	M	J	J	A
1	1	1	1	1	1	1	1	1
<b>CONTROLS:</b>								
X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS			
SETPOINTS	44 CWS (oF)	60 CWR (oF)	CNWS (oF)	CNWR (oF)				
PANEL INDICATORS								
- PRESSURE	LITE-HI	LITE-LOW	GAUGES					
- TEMPERATURE	LITE-HI	LITE-LOW	GAUGES					
- OTHER								
COMMENTS:								

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 11050A

EMC NO.: 1406-006

DATE: 11/09/94

PREPARED BY: BG

CHECKED BY:

FILE: 11050CND

**REFRIGERATION EQUIPMENT SURVEY OBSERVATIONS**

ACCU - 1A THRU 3B

CHILLER/COMPRESSOR NO.

MER#1

LOCATION (RM)

**UNIT TYPE:**

CENTRIFUGAL WITH WATER SIDE COOLING TOWER

OTHER

RECIPROCATING WITH WATER SIDE COOLING TOWER

AHU'S SERVED

RECIPROCATING WITH AIR COOLED CONDENSING UNIT

AHU 1 THRU 6

ABSORPTION WITH WATER SIDE COOLING TOWER

☒ AIR COOLED CONDENSING UNIT

SERVES CHILLERS

☒ CHW

DX

OTHER

**NAMEPLATE:**

CHILLER

TRANE

MFG.

CAUBC404A10

MODEL

SERIAL NO.

VOLTS

AMPS

PH

HZ

42.8 CAPACITY (TONS)

TOWER

MFG.

MODEL

# OF FANS

VOLTS

AMPS

PH

HZ

HP each

CW PUMP

MFG.

MODEL

SERIAL NO.

VOLTS

AMPS

PH

HZ

HP

CNW PUMP

MFG.

MODEL

SERIAL NO.

VOLTS

AMPS

PH

HZ

HP

COMMENTS:

8 UNITS TOTAL

**OPERATION:**

HOURS ON:

S

M

T

W

T

F

S

COMMENT

PRESENT START TIME

0

0

0

0

0

0

0

TIMECLOCK?

PRESENT STOP TIME

2400

2400

2400

2400

2400

2400

2400

REQUIRED START TIME

REQUIRED STOP TIME

MONTHS ON:

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1

**CONTROLS:**☒

PNEUMATIC

ELECTRIC

ELEC/NIC

DDC

COMMENTS

SETPOINTS

CWS (oF)

CWR (oF)

CNWS (oF)

CNWR (oF)

PANEL INDICATORS

- PRESSURE

LITE-HI

LITE-LOW

GAUGES

- TEMPERATURE

LITE-HI

LITE-LOW

GAUGES

- OTHER

COMMENTS:

**FIELD SURVEY NOTES**

BUILDING 21510

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 21510 VEH WASH

EMC NO.: 1406-006

DATE: 11/14/94

PREPARED BY: BG

CHECKED BY:

FILE: FD21510

**VI. BUILDING DATA SURVEY OBSERVATIONS**

BLDG NO: 21510

BLDG NAME: VEHICLE WASH

ZONE NO.	A		FUNCTION: CONTROL ROOM						
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900	
	SUN	700	TO	1900					
PRESENT TEMP	WINTER OCC	68.0 °F		UNOCC	68.0 °F				
	SUMMER OCC	°F		UNOCC	°F				

ZONE NO. B		FUNCTION: WINTER WASH						
OCCUPANCY HOURS:	M-F	700	TO	1900	SAT	700	TO	1900
	SUN	700	TO	1900				
PRESENT TEMP	WINTER OCC	65.0 øF		UNOCC	65.0 øF			
	SUMMER OCC	øF		UNOCC	øF			

ZONE NO.		FUNCTION:							
OCCUPANCY HOURS:		M-F		TO		SAT		TO	
		SUN		TO					
PRESENT TEMP	WINTER OCC		øF		UNOCC		øF		
	SUMMER OCC		øF		UNOCC		øF		

REMARKS: TRACER BUILDING  
STILL UNDER CONSTRUCTION

ADDITIONAL LOADS:

PACKAGED PRESSURE BOOSTER PUMPS: 22.5 HORSE POWER

AIR CURTAIN FANS: 48 HORSE POWER

PUMP STATION UNIT HEATERS: 80 TOTAL MBH OUTPUT AND 1/20 HP

VENTILATION FANS: TOTAL OF 20.2 HORSE POWER

DUPLEX AIR COMPRESSORS: 15 TOTAL HORSE POWER (7.5 EACH)

EXTRA HW PUMPS: 12 TOTAL HORSE POWER

3 HOT WATER UNIT HEATERS FOR MECH. ROOM: 63 TOTAL MBH OUTPUT AT 3/20 HP.

FILE: **10670BBRS**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		PSIG	180	HW SUPPLY					
RESET CONTROL (oF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)		OTHER					
COMMENTS:									

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 21510 VEH. WASH

EMC NO.: 1406-006

DATE: 11/14/94

PREPARED BY:

CHECKED BY:

FILE: 21510DHW

**DOMESTIC HW SURVEY OBSERVATIONS**

<b>DHW-1</b>	BOILER/CONVERTER NO.	MECH. ROOM	LOCATION (RM)
	SOURCE OF HEATING (PLANT)	WHOLE BLDNG	SERVES AREA

**UNIT TYPE:**

NO.2 OIL	NO.6 OIL	N.GAS	<input checked="" type="checkbox"/>	ELEC	FUELS:
STM/HW	HTHW/HW	HTHW/STM		OTHER	CONVERTER TYPE:

COMMENT:

**NAMEPLATE:**

AO SMITH DURA-PO	MFG.	DEN 40102	MODEL	9 KW	CAPACITY OUTPUT (BTUH,KW)
	MFG.		MODEL		CAPACITY OUTPUT (BTUH,KW)



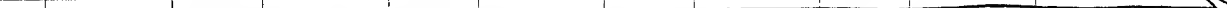

DOMESTIC HW CIRCULATION PUMP:

HW PUMP 1 - HP	MFG.	MODEL
HW PUMP 2 - HP	MFG.	MODEL
HW PUMP 3 - HP	MFG.	MODEL

COMMENT:

DIMENSION:	DIAMETER (INCHS)	HEIGHT OR LENGTH (INCHES)	GALLON
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**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0							TIMECLOCK?			
PRESENT STOP TIME	2400										
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1											

**CONTROLS:**

	<input checked="" type="checkbox"/>	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS			HW SUPPLY			
COMMENTS:						



FILE: 21510MA1

	X	PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 21510MA2

	<b>X</b>	PNEUMATIC		ELECTRIC		ELEC'NIC	<b>X</b>	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b>	MIN OA (Y/N)	<b>Y</b>	MAX OA (Y/N)	<b>N</b>	RA (Y/N)	<b>N</b>	EA (Y/N)	
		MA CONTROL	<b>Y</b>	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:	NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION								

FILE: 21510HV1

CONTROLS									
		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									
NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION									

FILE: **21510HX1**

	U/L	PNEUMATIC		ELECTRIC		ELEC'NIC		DDC	COMMENTS
SETPOINTS		PSIG	140	HW SUPPLY					
RESET CONTROL (oF):		HW HIGH		HW LOW		OA LOW		OA HIGH	
BURNER CONTROLS		O2 TRIM (Y/N)		OTHER					
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY BLDG: 21510 VEH WASH

EMC NO.: 1406-006

DATE: 11/14/94

PREPARED BY: BG

CHECKED BY:

FILE: 21510HV1

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

HV1	AHU NO.	CONTROL ROOM ATTIC	LOCATION (RM)
	REF. SYS. SERVING AHU	CONTROL ROOM	SERVES AREA

**UNIT TYPE:**

X	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
COMMENT:	NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION				

**NAMEPLATE:**

TRANE				MFG.					MODEL
0.8	SUPPLY FAN HP			MFG.					MODEL
	RET/EXH FAN HP			MFG.					MODEL
1220	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	9.0%	% HTG AREA SERVED
COMMENT:			EWT 180 LWT 160						
			GPM 3		NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION				

**COILS:**

X	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	X HW	ELEC	X MOD VLV	HEATING
X	NONE	STM	HW	ELEC	MOD VLV	REHEAT
X	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
X	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

OPERATION												
HOURS ON:	S	M	T	W	T	F	S	COMMENTS				
PRESENT START TIME	0	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	0	0	0	0	0	0	0	0			
REQUIRED START TIME												
REQUIRED STOP TIME												
MONTHS ON:	J	F	M	A	M	J	J	A	S	O	N	D
	/											

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK			
SPACE SETPOINT (°F):	OCC HEAT	UNOCC HEAT	OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):	HOT DECK	COLD DECK	MIXED AIR		OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	Y MAX OA (Y/N)	Y RA (Y/N)	N	EA (Y/N)	
	MA CONTROL	Y	ECONO-DB		ECONO-ENT	OTHER
DEMAND LIMIT:	(Y = YES ; N = NO)					
COMMENTS:	NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION					

**FILE: 21510M10**

	X	PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 21510MA1

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: 21510MA2

	PNEUMATIC	ELECTRIC	ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK			
SPACE SETPOINT (*F):	OCC HEAT	UNOCC HEAT	OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):	HOT DECK	COLD DECK	MIXED AIR		OTHER	
DAMPER CONTROL:	N MIN OA (Y/N)	Y MAX OA (Y/N)	N RA (Y/N)	N	EA (Y/N)	
	MA CONTROL	Y ECONO-DB	ECONO-ENT		OTHER	
DEMAND LIMIT:	( Y = YES ; N = NO )					
COMMENTS:	NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION					



FILE: **21510MA4**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (°F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	Y	RA (Y/N)	Y	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: **21510MA5**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT ("F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS ("F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

FILE: **21510MA6**

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:	N	( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 21510 VEH WASH

EMC NO.: 1406-006

DATE: 11/14/94

PREPARED BY: BG

CHECKED BY:

FILE: 21510MA7

**AIR HANDLING UNIT SURVEY OBSERVATIONS**

<b>MAU7</b>	AHU NO.	<b>WINTER WASH</b>	LOCATION (RM)
	REF. SYS. SERVING AHU	<b>WINTER WASH</b>	SERVES AREA

**UNIT TYPE:**

<b>X</b>	SINGLE ZN	2-PIPE FC	4-PIPE FC	UNIT HTR	H&V
	MULTIZONE	DOUBLE DT	REHEAT	INDUCTION	VAV
	NUMBER OF ZONES	OTHER			
	COMMENT:	NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION			

**NAMEPLATE:**

TRANE					MFG.					MODEL
3.0	SUPPLY FAN HP				MFG.					MODEL
	RET/EXH FAN HP				MFG.					MODEL
5625	CFM-HTG		CFM-CLG	100%	MIN %OA	100%	MAX %OA	9.0%	% HTG AREA SERVED	
COMMENT:		EWT 180 LWT 160								
		GPM 34.4 NO EQUIPMENT RUNNING SINCE STILL UNDER CONSTRUCTION								

**COILS:**

<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	PREHEAT
	NONE	STM	<b>X</b> HW	ELEC	<b>X</b> MOD VLV	HEATING
<b>X</b>	NONE	STM	HW	ELEC	MOD VLV	REHEAT
<b>X</b>	NONE	STM	HW	EVAP MEDIA	MOD VLV	HUMID.
<b>X</b>	NONE	DX	CW		MOD VLV	COOLING

**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENTS			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	0	0	0	0	0	0	0				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D

**CONTROLS:**

	PNEUMATIC	ELECTRIC	ELEC'NIC	<b>X</b>	DDC	COMMENTS
THERMOSTAT TYPE:	SINGLE STPT	DUAL SETPNT	SETBACK			
SPACE SETPOINT (°F):	OCC HEAT	UNOCC HEAT	OCC COOL		UNOCC COOL	
OTHER SETPOINTS (°F):	HOT DECK	COLD DECK	MIXED AIR		OTHER	
DAMPER CONTROL:	<b>N</b> MIN OA (Y/N)	<b>Y</b> MAX OA (Y/N)	<b>N</b> RA (Y/N)	<b>N</b>	EA (Y/N)	
	MA CONTROL	<b>Y</b> ECONO-DB	ECONO-ENT		OTHER	
DEMAND LIMIT:	<b>N</b>	(Y = YES ; N = NO)				
COMMENTS:						

FILE: 21510MA9

		PNEUMATIC		ELECTRIC		ELEC'NIC	X	DDC	COMMENTS
THERMOSTAT TYPE:		SINGLE STPT		DUAL SETPNT		SETBACK			
SPACE SETPOINT (*F):		OCC HEAT		UNOCC HEAT		OCC COOL		UNOCC COOL	
OTHER SETPOINTS (*F):		HOT DECK		COLD DECK		MIXED AIR		OTHER	
DAMPER CONTROL:	N	MIN OA (Y/N)	Y	MAX OA (Y/N)	N	RA (Y/N)	N	EA (Y/N)	
		MA CONTROL	Y	ECONO-DB		ECONO-ENT		OTHER	
DEMAND LIMIT:		( Y = YES ; N = NO )							
COMMENTS:									

**E M C ENGINEERS, INC.**

PROJECT: UMCS STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033

CLIENT PROJ. ENG: STEVE ROWLEY

LOCATION: FORT DRUM, NY

BLDG: 21510 VEH.WASH.

EMC NO.: 1406-006

DATE: 11/14/94

PREPARED BY: BG

CHECKED BY:

FILE: 21510HX1

**BOILER & CONVERTER SURVEY OBSERVATIONS**

HX-1	BOILER/CONVERTER NO.	MECHANICAL ROOM	LOCATION (RM)
B-1,2	SOURCE OF HEATING (PLANT)	HEATED SLAB SNOW MELTING	SERVES AREA

**UNIT TYPE:**

STEAM	PSIG	HW	TEMP.	BOILER TYPE:
NO.2 OIL	NO.6 OIL	N.GAS	ELEC	FUELS:
STM/HW	X	HTHW/HW	OTHER	CONVERTER TYPE:
SPACE HEAT	DHW	X	OTHER	USE:
COMMENT: FOR SNOW MELTING				% HTG AREA SERVED
				BB RADIATION ONLY

**NAMEPLATE:**

ARMSTRONG	MFG.	3X15X84030	MODEL	CAPACITY OUTPUT (BTUH)
				CAPACITY INPUT (BTUH)
	MFG.		MODEL	CAPACITY OUTPUT (BTUH)
				CAPACITY INPUT (BTUH)
2	HW PUMP 1 - HP	US MOTORS	MFG.	MODEL
	HW PUMP 2 - HP		MFG.	MODEL
	HW PUMP 3 - HP		MFG.	MODEL
COMMENT: GLYCOL TO GLYCOL CONVERTOR				
EWT 180 LWT 150 70 GPM				
HEAD 50'				

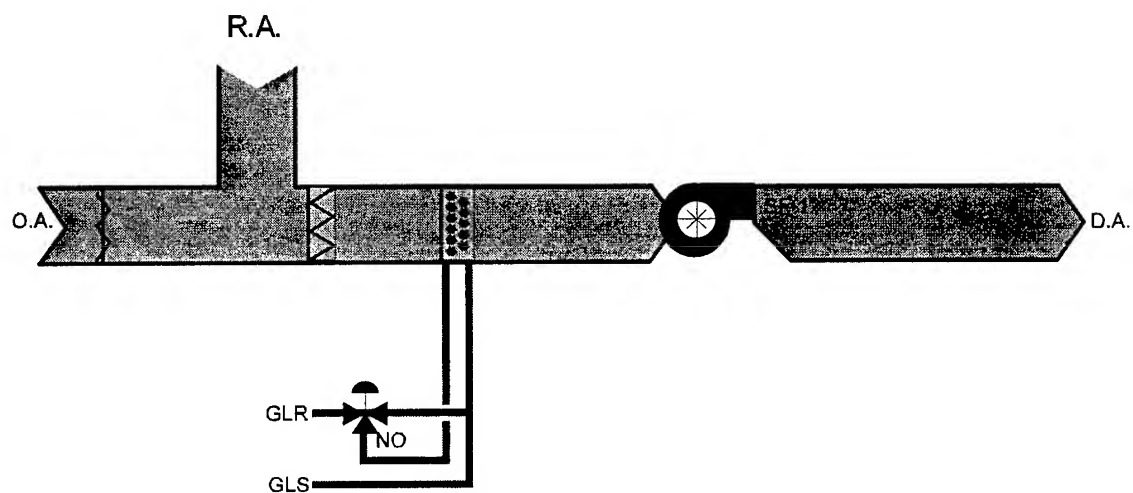
**OPERATION:**

HOURS ON:	S	M	T	W	T	F	S	COMMENT			
PRESENT START TIME	0	0	0	0	0	0	0	TIMECLOCK?			
PRESENT STOP TIME	2400	2400	2400	2400	2400	2400	2400				
REQUIRED START TIME											
REQUIRED STOP TIME											
MONTHS ON:											
J	F	M	A	M	J	J	A	S	O	N	D
1	1	1	1	1	1	1	1	1	1	1	1

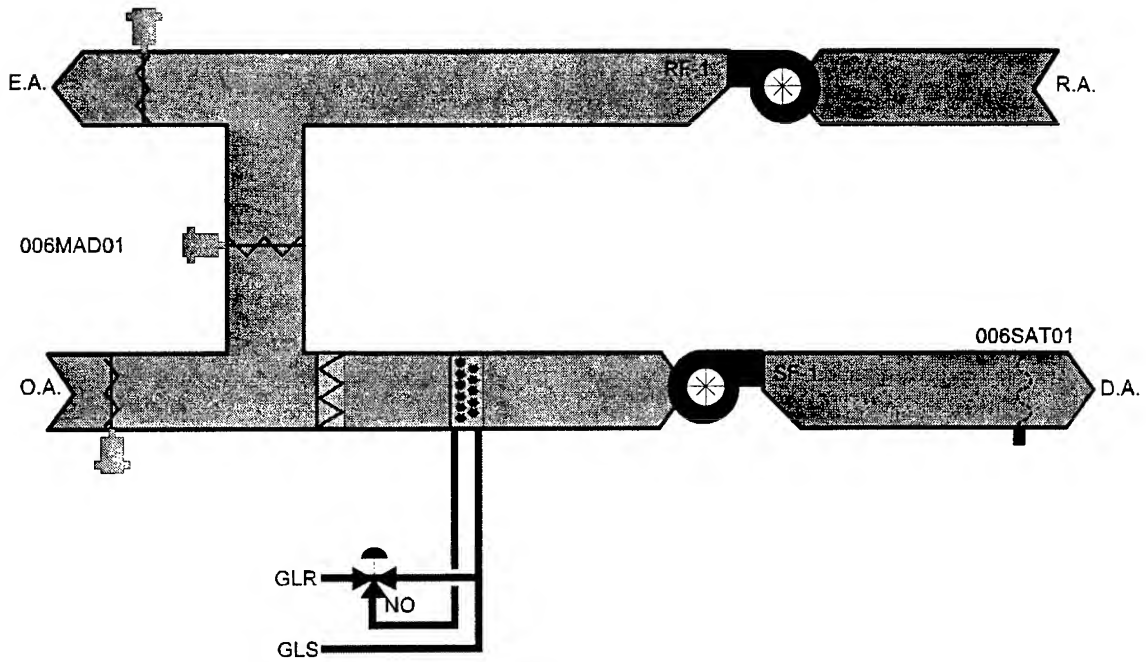
**CONTROLS:**

X	PNEUMATIC	ELECTRIC	ELEC'NIC	DDC	COMMENTS
SETPOINTS	PSIG	140	HW SUPPLY		
RESET CONTROL (oF):	HW HIGH	HW LOW	OA LOW	OA HIGH	
BURNER CONTROLS	O2 TRIM (Y/N)	OTHER			
COMMENTS:					

# 1.HEATING AND VENTILATING UNIT WITHOUT RETURN FAN

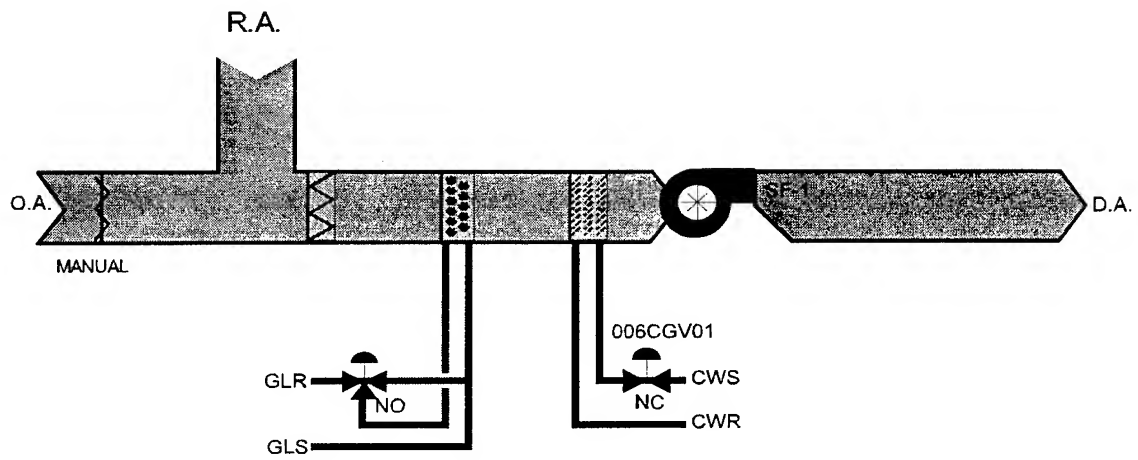


## 2. HEATING AND VENTILATING UNIT

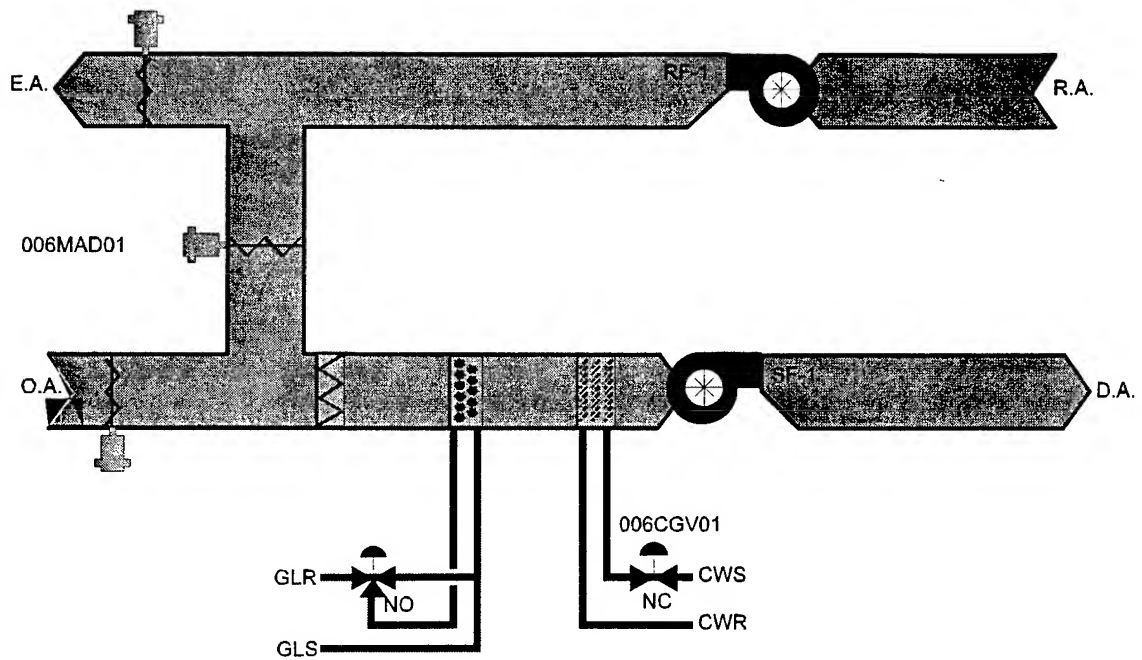




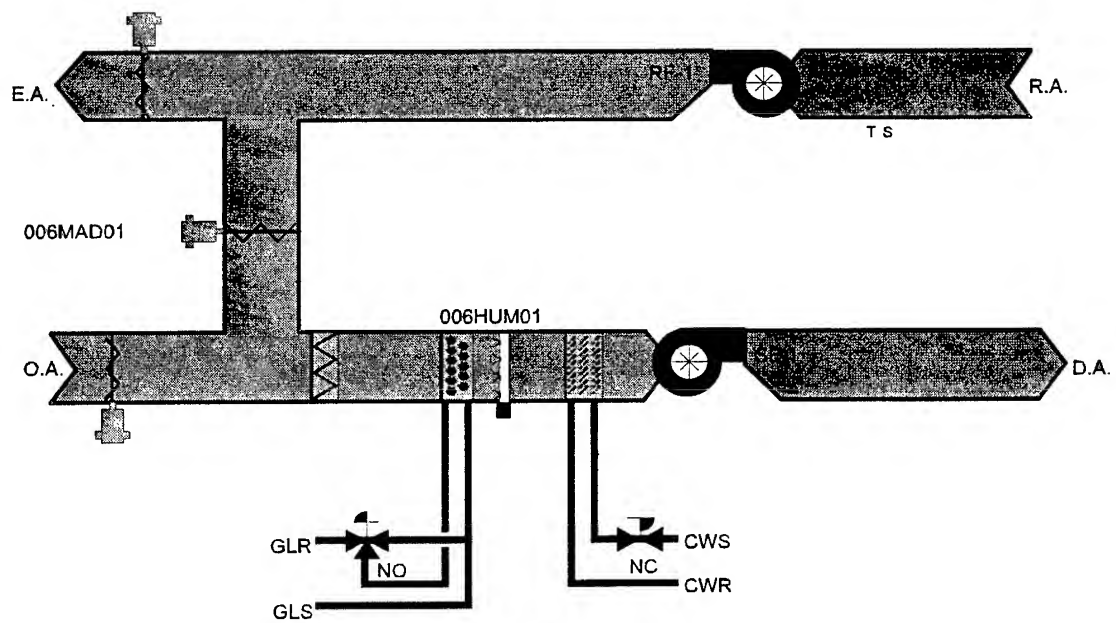
### 3. SINGLE ZONE AHU WITHOUT RETURN FAN



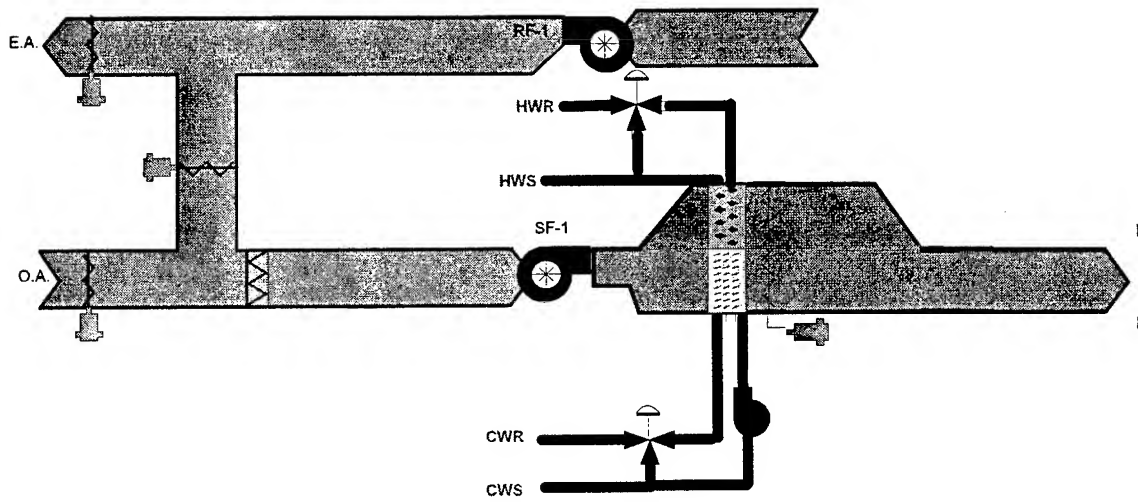
#### 4. SINGLE ZONE AHU



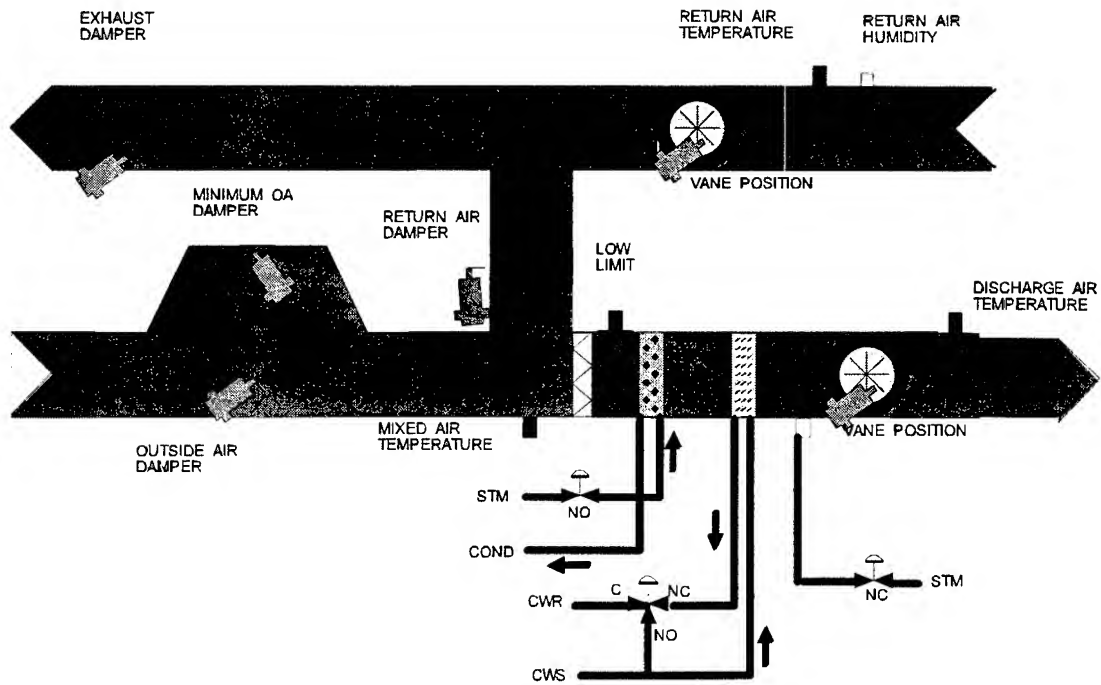
## 5. SINGLE ZONE AHU WITH HUMIDIFICATION



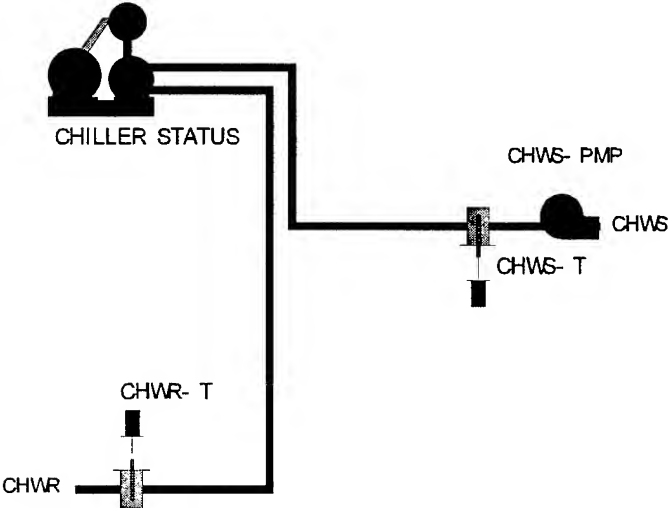
## 6. MULTI-ZONE AHU



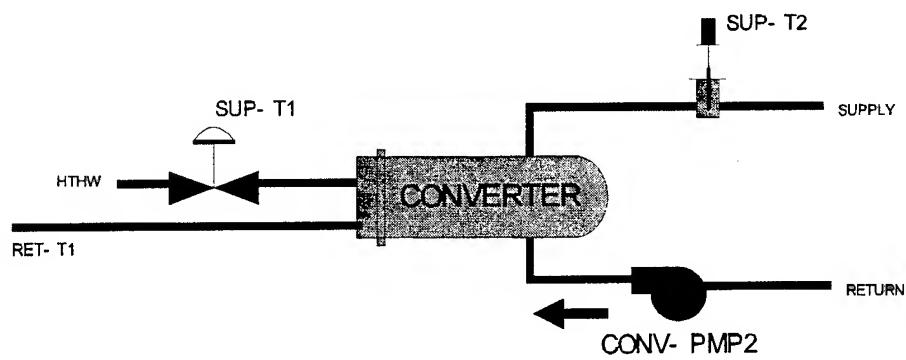
## 7. VAV AHU



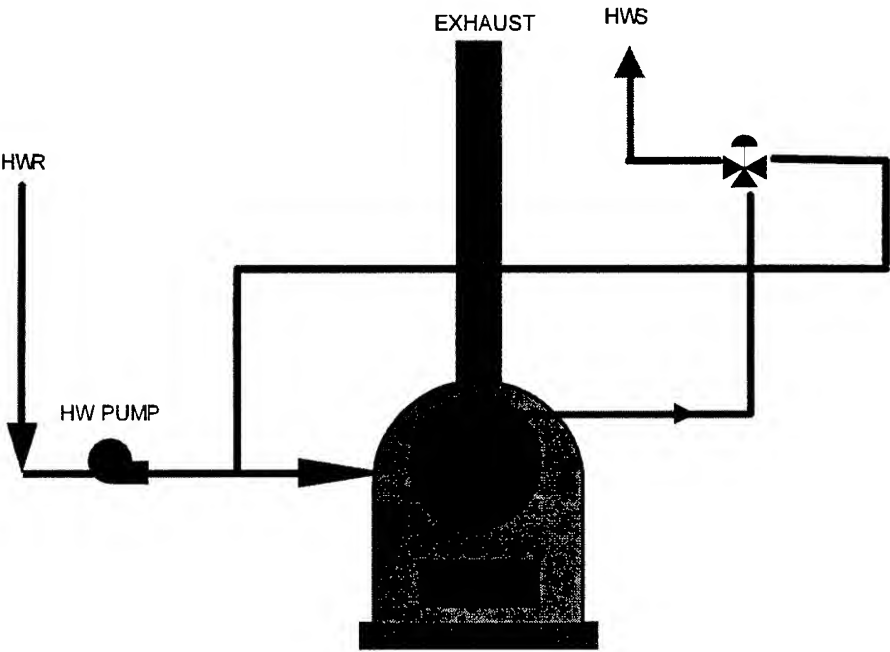
8. CHILLER AND PUMPS



## 9. CONVERTER AND PUMPS

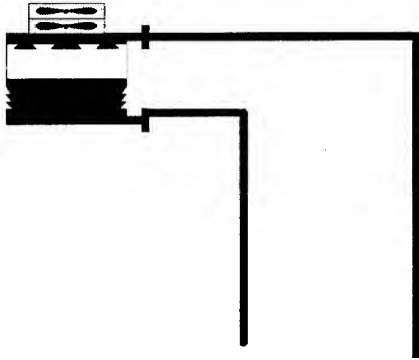


10. HOT WATER BOILER AND PUMPS



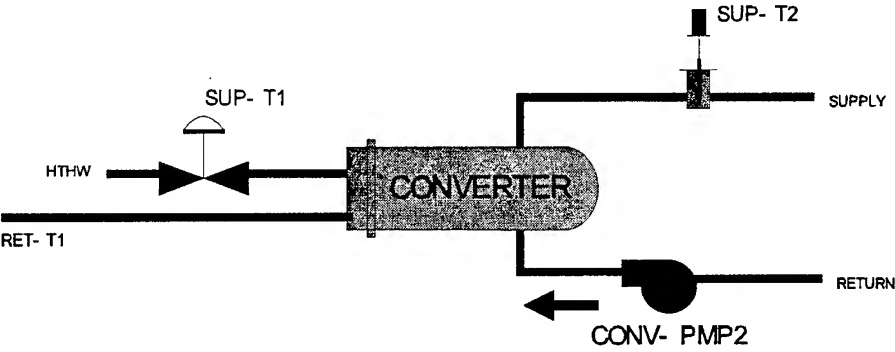


11. CONDENSING UNIT



HOT GAS REFRIGERANT RETURN

12. PERIMETER RADIATION



**APPENDIX I**  
**COMPUTER SIMULATIONS**

## **APPENDIX I**

### **DOE-2 COMPUTER SIMULATIONS**

Appendix I contains the DOE-2 input and output files.

#### **I.1 BASE RUN**

A base model was run for 20 representative buildings. The existing loads, systems, and plants were entered into the DOE-2 program and the outputs simulated the current energy usage, which was compared with the available utility data for accuracy.

#### **I.2 RUN 1, SCHEDULED START/STOP & NIGHT SETBACK**

Run 1 modified the Base Run, to simulate the energy usage if HVAC equipment was turned off when the building was unoccupied. The minimum space temperature setpoint was reduced to 50°F. If the space temperature dropped below 50°F for a certain hour, the pump controlling fin tube radiation would be turned on. Upon a further drop in space temperature, or if fin tube radiation was not available, the space air handling units cycled on for that hour.

#### **I.3 RUN 2, ECONOMIZER MODEL**

Run 2 modified Run 1, to simulate the addition of an economizer function, where applicable.

#### **I.4 RUN 3, DDC MODEL**

Run 3 modified Run 2, to simulate direct digital control (DDC) of HVAC equipment to prevent overheating or overcooling of spaces. The space temperature setpoints are 68°F for winter and 78°F for summer.

#### **I.5 RUN 4, FORCED VENTILATION MODEL**

Run 4 modified Run 3, to simulate forced ventilation. The air handling units in this model recirculate and heat 100% space return air (0% outside air) to heat the space before the space is occupied each day. This is applicable to air handling units which provide heating and have return air ducts, and to spaces which have less than 24 hours of operation per day.

# SAMPLE DOE-2 COMPUTER SIMULATION OUTPUT

EMC ENGINEERS INC. EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 3/26/1995 12:19:33 PDL RUN 1  
 DENVER, CO 80227 DIV CMD/CNTL BLDG BASE MODEL  
 REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- MASSENA, NY

ENERGY TYPE  
 IN SITE MBTU- STEAM ELECTRICITY RECOVERED

## CATEGORY OF USE

SPACE HEAT	8226.92	0.00	0.00
SPACE COOL	0.00	29.71	0.00
HVAC AUX	0.00	1188.68	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	0.00	923.34	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	0.00	16.26	0.00
TOTAL	8226.92	2157.99	0.00

29.71 MBTU = 8726 kWh is entered into the  
 Energy Constant Calculation Sheet under  
 COOLING (kWh) - BASERUN.

8226.92 MBTU is entered into the Energy Constant Calculation  
 Sheet under HEATING (MBTU) - BASERUN.

TOTAL SITE ENERGY 10385.03 MBTU 129.3 KBTU/SQFT-YR GROSS-AREA 129.3 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 14707.69 MBTU 183.2 KBTU/SQFT-YR GROSS-AREA 183.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 4.2  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

**COMPUTER SIMULATIONS**

BUILDING 36

**COMPUTER SIMULATIONS**  
**BUILDING 36**

BASE RUN

# LDL PROCESSOR INPUT DATA

3/18/1995 13:28:38 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
* 16 * LINE-5 *BASE MODEL *..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT VERIFICATION=(LV-A,LV-B,LV-C)
* 21 * SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..
* 22 * BUILDING-LOCATION LATITUDE = 44.0
* 23 * ALTITUDE = 655.
* 24 * AZIMUTH = -130.
* 25 * TIME-ZONE = 5
* 26 * GROSS-AREA = 26440
* 27 * HOLIDAY = NO
* 28 * SHIELDING-COEF = 0.29
* 29 * X-REF = 0.0
* 30 * Y-REF = 0.0 ..
* 31 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 32 *
* 33 *
* 34 *      $ SCHEDULES
* 35 *
* 36 * LIGHTS =DAY-SCHEDULE (1,2) (1.)
* 37 *      (3,11) (0.5)
* 38 *      (12,13) (0.6)
* 39 *      (14,24) (1.) ..
* 40 *
* 41 * OCCUP =DAY-SCHEDULE (1,5) (0.)
* 42 *      (6,10) (0.1,0.5,0.9,0.8,0.5)
* 43 *      (11,14) (0.7,0.9,0.8,0.4)
* 44 *      (15,16) (0.3)
* 45 *      (17,18) (0.5,0.9)

```



\* 46 \* (19,20) (0.7,0.2)  
 \* 47 \* (21,24) (0.) ..  
 \* 48 \*  
 \* 49 \* APPLIANCE =DAY-SCHEDULE (1) (0.)  
 \* 50 \* (2,3) (0.7)  
 \* 51 \* (4,12) (0.02)  
 \* 52 \* (13,15) (0.6)  
 \* 53 \* (16,18) (0.02)  
 \* 54 \* (19,20) (0.7)  
 \* 55 \* (21,24) (0.8) ..  
 \* 56 \*  
 \* 57 \* CND\_DAY =DAY-SCHEDULE (1,24) (1.) ..  
 \* 58 \*  
 \* 59 \* FULL\_OFFD =DAY-SCHEDULE (1,24) (0.) ..  
 \* 60 \*  
 \* 61 \* appliance =DAY-SCHEDULE (1,5) (0.)  
 \* 62 \* (6,7) (0.4)  
 \* 63 \* (8,11) (0.6)  
 \* 64 \* (12,13) (0.8)  
 \* 65 \* (14,15) (0.6)  
 \* 66 \* (16,17) (0.8)  
 \* 67 \* (18,19) (0.6)  
 \* 68 \* (20,24) (0.) ..  
 \* 69 \*  
 \* 70 \* lights =DAY-SCHEDULE (1,5) (0.2)  
 \* 71 \* (6) (0.5)  
 \* 72 \* (7,13) (0.8)  
 \* 73 \* (14,15) (0.9)  
 \* 74 \* (16,18) (0.8)  
 \* 75 \* (19,20) (0.7)  
 \* 76 \* (21,24) (0.2) ..  
 \* 77 \*  
 \* 78 \* FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 79 \*  
 \* 80 \*  
 \* 81 \* PEOPLE =WEEK-SCHEDULE (ALL) OCCUP ..  
 \* 82 \*  
 \* 83 \* LIGHTS\_WK =WEEK-SCHEDULE (ALL) lights ..  
 \* 84 \*  
 \* 85 \* APPLI\_WK =WEEK-SCHEDULE (ALL) appliance ..  
 \* 86 \*  
 \* 87 \* CND\_WK =WEEK-SCHEDULE (ALL) CND\_DAY ..  
 \* 88 \*  
 \* 89 \* FULL\_OFFW =WEEK-SCHEDULE (ALL) FULL\_OFFD ..  
 \* 90 \*  
 \* 91 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 92 \*  
 \* 93 \*  
 \* 94 \* \$ FULL\_ON SCHEDULE  
 \* 95 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..

\* 96 \*  
 \* 97 \* \$ LOADS OCCUPANCY SCHED  
 \* 98 \* OCCUPANCY =SCHEDULE THRU DEC 31 PEOPLE ..  
 \* 99 \*  
 \* 100 \* \$ LIGHTING SCHEDULE  
 \* 101 \* LIGHTS\_ON =SCHEDULE THRU DEC 31 LIGHTS\_WK ..  
 \* 102 \*  
 \* 103 \* \$ APPLIANCE SCHEDULE  
 \* 104 \* APPLI\_ON =SCHEDULE THRU DEC 31 APPLI\_WK ..  
 \* 105 \*  
 \* 106 \* \$ COND VENTIL SCHED  
 \* 107 \* CND\_SCHED =SCHEDULE THRU MAR 1 FULL\_OFFW  
 \* 108 \*           THRU NOV 30 CND\_WK  
 \* 109 \*           THRU DEC 31 FULL\_OFFW ..  
 \* 110 \*  
 \* 111 \*  
 \* 112 \*  
 \* 113 \*           \$ CONSTRUCTION TYPES  
 \* 114 \*  
 \* 115 \*  
 \* 116 \*  
 \* 117 \*  
 \* 118 \* \$ DOOR CONSTRUCTION  
 \* 119 \* DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 \* 120 \* FLOOR =CONSTRUCTION U-VALUE = 0.100  
 \* 121 \*           ABSORPTANCE = 1.000  
 \* 122 \*           ROUGHNESS = 1 ..  
 \* 123 \* ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
 \* 124 \* EXWALL =CONSTRUCTION U-VALUE = 0.200  
 \* 125 \*           ABSORPTANCE = 0.750 ..  
 \* 126 \* INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
 \* 127 \*  
 \* 128 \* GTYPE\_1 =GLASS-TYPE SHADING-COEF = 0.400  
 \* 129 \*           PANES = 1  
 \* 130 \*           GLASS-CONDUCTANCE = 1.130 ..  
 \* 131 \* GTYPE\_2 =GLASS-TYPE SHADING-COEF = 0.300  
 \* 132 \*           PANES = 1  
 \* 133 \*           GLASS-CONDUCTANCE = 0.790 ..  
 \* 134 \* GTYPE\_3 =GLASS-TYPE SHADING-COEF = 0.400  
 \* 135 \*           PANES = 1  
 \* 136 \*           GLASS-CONDUCTANCE = 0.360 ..  
 \* 137 \*  
 \* 138 \*  
 \* 139 \*  
 \* 140 \*  
 \* 141 \*           \$ SPACE DESCRIPTION  
 \* 142 \*  
 \* 143 \* SECTIONAB =SPACE AREA = 19740.0 VOLUME = 177660.0  
 \* 144 \*           AZIMUTH = -150 ZONE-TYPE = CONDITIONED  
 \* 145 \*           PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 150.0

\* 146 \* PEOPLE-HEAT-GAIN = 650.0  
 \* 147 \* LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 12.0  
 \* 148 \* LIGHTING-SCHEDULE = LIGHTS\_ON  
 \* 149 \* EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 11.0  
 \* 150 \* SOURCE-SCHEDULE = FULL\_ON SOURCE-TYPE = HOT-WATER  
 \* 151 \* SOURCE-BTU/HR = 11500.0 SOURCE-SENSIBLE = 0.1  
 \* 152 \* SOURCE-LATENT = 0.2 INF-METHOD = AIR-CHANGE  
 \* 153 \* AIR-CHANGES/HR = 0.33 INF-SCHEDULE = FULL\_ON ..  
 \* 154 \*  
 \* 155 \* I-W HEIGHT = 9.0 WIDTH = 128.0 CONS = INWALL  
 \* 156 \* AZIMUTH = -150 NEXT-TO = SECTIONC ..  
 \* 157 \*  
 \* 158 \* E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL  
 \* 159 \* AZIMUTH = 120 ..  
 \* 160 \*  
 \* 161 \* WINDOW HEIGHT = 9.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 162 \* MULTIPLIER = 4.0 ..  
 \* 163 \*  
 \* 164 \* DOOR HEIGHT = 8.0 WIDTH = 7.0 CONS = DOORCON ..  
 \* 165 \*  
 \* 166 \* WINDOW HEIGHT = 9.0 WIDTH = 5.0 G-T = GTYPE\_1 ..  
 \* 167 \*  
 \* 168 \* WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 169 \* MULTIPLIER = 14.0 ..  
 \* 170 \*  
 \* 171 \* E-W HEIGHT = 9.0 WIDTH = 128.0 CONS = EXWALL  
 \* 172 \* AZIMUTH = 30 ..  
 \* 173 \*  
 \* 174 \* DOOR HEIGHT = 8.0 WIDTH = 4.0 CONS = DOORCON ..  
 \* 175 \*  
 \* 176 \* E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL  
 \* 177 \* AZIMUTH = -60 ..  
 \* 178 \*  
 \* 179 \* WINDOW HEIGHT = 6.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 180 \* MULTIPLIER = 5.0 ..  
 \* 181 \*  
 \* 182 \* DOOR HEIGHT = 7.0 WIDTH = 4.0 CONS = DOORCON ..  
 \* 183 \*  
 \* 184 \* DOOR HEIGHT = 10.0 WIDTH = 20.0 CONS = DOORCON ..  
 \* 185 \*  
 \* 186 \* DOOR HEIGHT = 9.0 WIDTH = 4.0 CONS = DOORCON  
 \* 187 \* MULTIPLIER = 2.0 ..  
 \* 188 \*  
 \* 189 \* DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..  
 \* 190 \*  
 \* 191 \* DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..  
 \* 192 \*  
 \* 193 \* ROOF HEIGHT = 159.0 WIDTH = 128.0 CONS = ROOFCON  
 \* 194 \* AZIMUTH = -150 TILT = 0 ..  
 \* 195 \*

\* 196 \* U-W HEIGHT = 159.0 WIDTH = 128.0 CONS = FLOOR  
 \* 197 \* AZIMUTH = -150 ..  
 \* 198 \*  
 \* 199 \*  
 \* 200 \* SECTIONC =SPACE AREA = 6700.0 VOLUME = 60300.0  
 \* 201 \* AZIMUTH = -150 ZONE-TYPE = CONDITIONED  
 \* 202 \* PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 100.0  
 \* 203 \* PEOPLE-HEAT-GAIN = 650.0  
 \* 204 \* LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 7.0  
 \* 205 \* LIGHTING-SCHEDULE = LIGHTS\_ON  
 \* 206 \* EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 3.0  
 \* 207 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.33  
 \* 208 \* INF-SCHEDULE = FULL\_ON ..  
 \* 209 \*  
 \* 210 \* E-W HEIGHT = 9.0 WIDTH = 108.0 CONS = INWALL  
 \* 211 \* AZIMUTH = -150 ..  
 \* 212 \*  
 \* 213 \* WINDOW HEIGHT = 9.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 214 \* MULTIPLIER = 4.0 ..  
 \* 215 \*  
 \* 216 \* DOOR HEIGHT = 8.0 WIDTH = 7.5 CONS = DOORCON ..  
 \* 217 \*  
 \* 218 \* WINDOW HEIGHT = 9.0 WIDTH = 5.0 G-T = GTYPE\_1 ..  
 \* 219 \*  
 \* 220 \* WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 221 \* MULTIPLIER = 14.0 ..  
 \* 222 \*  
 \* 223 \* E-W HEIGHT = 9.0 WIDTH = 62.0 CONS = EXWALL  
 \* 224 \* AZIMUTH = 120 ..  
 \* 225 \*  
 \* 226 \* E-W HEIGHT = 9.0 WIDTH = 108.0 CONS = EXWALL  
 \* 227 \* AZIMUTH = 30 ..  
 \* 228 \*  
 \* 229 \* I-W HEIGHT = 9.0 WIDTH = 62.0 CONS = EXWALL  
 \* 230 \* AZIMUTH = -60 NEXT-TO = SECTIONAB ..  
 \* 231 \*  
 \* 232 \* ROOF HEIGHT = 62.0 WIDTH = 108.0 CONS = ROOFCON  
 \* 233 \* AZIMUTH = -150 TILT = 0 ..  
 \* 234 \*  
 \* 235 \* U-W HEIGHT = 62.0 WIDTH = 108.0 CONS = FLOOR  
 \* 236 \* AZIMUTH = -150 ..  
 \* 237 \*  
 \* 238 \*  
 \* 239 \* END ..  
 \* 240 \* COMPUTE LOADS ..  
 \* 241 \*  
 \* 242 \* INPUT SYSTEMS ..

SDL PROCESSOR INPUT DATA

```
* 243 *
* 244 *
* 245 *      $-----$
* 246 *      $EZ-DOE SYSTEMS INPUT$
* 247 *      $-----$
* 248 *
* 249 *      $ GENERAL PROJECT DATA
* 250 *
* 251 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 252 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 253 * LINE-3 * DENVER, CO 80227 *
* 254 *
* 255 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
* 256 * LINE-5 *BASE MODEL * ..
* 257 * ABORT ERRORS ..
* 258 * DIAGNOSTIC WARNINGS ..
* 259 * SYSTEMS-REPORT VERIFICATION=(SV-A,SV-B)
* 260 * SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-E,SS-F,SS-G,
* 261 * SS-H,SS-I,SS-J,SS-K,SS-L,SS-M,SS-N,
* 262 * SS-O) ..
* 263 *
* 264 *      $ SCHEDULES
* 265 *
* 266 * D_FULL =DAY-SCHEDULE (1,24) (1.) ..
* 267 * D_OFF =DAY-SCHEDULE (1,24) (0.) ..
* 268 * HEAT_68_D =DAY-SCHEDULE (1,24) (70.) ..
* 269 * COOL_72_D =DAY-SCHEDULE (1,24) (72.) ..
* 270 *
* 271 * W_FULL =WEEK-SCHEDULE (ALL) D_FULL ..
* 272 *
* 273 * W_OFF =WEEK-SCHEDULE (ALL) D_OFF ..
* 274 *
* 275 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 276 *
* 277 * COOL_72_W =WEEK-SCHEDULE (ALL) COOL_72_D ..
* 278 *
* 279 *
* 280 * FULL_ON =SCHEDULE THRU DEC 31 W_FULL ..
* 281 *
* 282 * FULL_OFF =SCHEDULE THRU DEC 31 W_OFF ..
* 283 *
* 284 * HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 285 *
* 286 * COOL_72 =SCHEDULE THRU DEC 31 COOL_72_W ..
* 287 *
```

\* 288 \*  
 \* 289 \*  
 \* 290 \*       \$ ZONE DESCRIPTION  
 \* 291 \*  
 \* 292 \* SECTIONAB =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0  
 \* 293 \*       HEAT-TEMP-SCH = HEAT\_68 COOL-TEMP-SCH = COOL\_72  
 \* 294 \*       ZONE-TYPE = CONDITIONED  
 \* 295 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 296 \*       BASEBOARD-CTRL = THERMOSTATIC  
 \* 297 \*       BASEBOARD-RATING = -261500. ASSIGNED-CFM = 17135.  
 \* 298 \*       OUTSIDE-AIR-CFM = 3925. SIZING-OPTION = FROM-LOADS  
 \* 299 \*       RATED-CFM = 17135.0 ..  
 \* 300 \*  
 \* 301 \* SECTIONC =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0  
 \* 302 \*       HEAT-TEMP-SCH = HEAT\_68 COOL-TEMP-SCH = COOL\_72  
 \* 303 \*       ZONE-TYPE = CONDITIONED  
 \* 304 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 305 \*       BASEBOARD-CTRL = THERMOSTATIC  
 \* 306 \*       BASEBOARD-RATING = -83000. ASSIGNED-CFM = 6950.  
 \* 307 \*       OUTSIDE-AIR-CFM = 1200. SIZING-OPTION = FROM-LOADS  
 \* 308 \*       RATED-CFM = 6950.0 ..  
 \* 309 \*  
 \* 310 \*  
 \* 311 \*       \$ SYSTEM DESCRIPTION  
 \* 312 \*  
 \* 313 \* SYSTEMAB =SYSTEM   SYSTEM-TYPE = SZRH  
 \* 314 \*       MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0  
 \* 315 \*       PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0  
 \* 316 \*       ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0  
 \* 317 \*       OA-CONTROL = FIXED SUPPLY-CFM = 17135.  
 \* 318 \*       RETURN-CFM = 13210. RATED-CFM = 17135.  
 \* 319 \*       MIN-OUTSIDE-AIR = 0.35 SUPPLY-DELTA-T = 2.4  
 \* 320 \*       SUPPLY-KW = 0.00118  
 \* 321 \*       MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 322 \*       NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 323 \*       MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 500000.  
 \* 324 \*       HEATING-CAPACITY = -818500. FURNACE-AUX = 0.  
 \* 325 \*       PREHEAT-SOURCE = HOT-WATER  
 \* 326 \*       ZONE-NAMES = (SECTIONAB) ..  
 \* 327 \*  
 \* 328 \* ADDITIONC =SYSTEM   SYSTEM-TYPE = SZRH  
 \* 329 \*       MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0  
 \* 330 \*       PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0  
 \* 331 \*       ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0  
 \* 332 \*       OA-CONTROL = FIXED SUPPLY-CFM = 6950.  
 \* 333 \*       RETURN-CFM = 5750. RATED-CFM = 6950.  
 \* 334 \*       MIN-OUTSIDE-AIR = 0.17 SUPPLY-DELTA-T = 2.4  
 \* 335 \*       SUPPLY-KW = 0.00081  
 \* 336 \*       MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 337 \*       NIGHT-CYCLE-CTRL = STAY-OFF RETURN-STATIC = 1.25

```

* 338 *      RETURN-EFF = 0.88 NIGHT-VENT-DT = 0.0
* 339 *      MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 204000.
* 340 *      HEATING-CAPACITY = -235452. FURNACE-AUX = 0.
* 341 *      PREHEAT-SOURCE = HOT-WATER
* 342 *      HUMIDIFIER-TYPE = ELECTRIC
* 343 *      ZONE-NAMES = (SECTIONC) ..
* 344 *
* 345 * END ..
* 346 * COMPUTE SYSTEMS ..
* 347 *
* 348 * INPUT PLANT ..

```

# PDL PROCESSOR INPUT DATA

3/18/1995 13:28:38 PDL RUN 1

```

* 349 *
* 350 *
* 351 *      $-----$
* 352 *      $EZ-DOE PLANTS INPUT$
* 353 *      $-----$
* 354 *
* 355 *      $ GENERAL PROJECT DATA
* 356 *
* 357 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 358 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 359 * LINE-3 * DENVER, CO 80227 *
* 360 *
* 361 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
* 362 * LINE-5 *BASE MODEL * ..
* 363 *
* 364 * ABORT ERRORS ..
* 365 * DIAGNOSTIC WARNINGS ..
* 366 * PLANT-REPORT VERIFICATION=(PV-A)
* 367 * SUMMARY=(PS-A,PS-B,PS-D,PS-H,PS-I,BEPS) ..
* 368 *
* 369 *      $ SCHEDULES
* 370 *
* 371 * DAY_ON =DAY-SCHEDULE (1,7) (0.)
* 372 *      (8,18) (1.)
* 373 *      (19,24) (0.) ..
* 374 *
* 375 *
* 376 * FULL_ON =WEEK-SCHEDULE (ALL) DAY_ON ..
* 377 *
* 378 *
* 379 * $ heating plant schedule

```

\* 380 \* heating =SCHEDULE THRU DEC 31 FULL\_ON ..  
 \* 381 \*  
 \* 382 \*  
 \* 383 \*  
 \* 384 \*           \$ EQUIPMENT DESCRIPTION  
 \* 385 \*  
 \* 386 \* HW\_BOILER =PLANT-EQUIPMENT TYPE = HW-BOILER  
 \* 387 \*           SIZE = 1. INSTALLED-NUMBER = 2  
 \* 388 \*           MAX-NUMBER-AVAIL = 2 ..  
 \* 389 \*  
 \* 390 \* CHILLERS =PLANT-EQUIPMENT TYPE = OPEN-REC-CHLR  
 \* 391 \*           SIZE = 0.3 INSTALLED-NUMBER = 2  
 \* 392 \*           MAX-NUMBER-AVAIL = 2 ..  
 \* 393 \*  
 \* 394 \* ADDITION =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR  
 \* 395 \*           SIZE = 0.2 ..  
 \* 396 \*  
 \* 397 \* PLANT-PARAMETERS   BOILER-CONTROL = STANDBY MAKEUP-WTR-T = 50.  
 \* 398 \*           STM-BOILER-HIR = 0.76 HW-BOILER-HIR = 1.27  
 \* 399 \*           CHILLER-CONTROL = STANDBY OPEN-REC-COND-TYPE = AIR  
 \* 400 \*           HERM-REC-COND-TYPE = AIR COMP-TO-TWR-WTR = 2.77  
 \* 401 \*           CCIRC-HEAD = 100.0 HCIRC-HEAD = 70.0 ..  
 \* 402 \*  
 \* 403 \*  
 \* 404 \* PART-LOAD-RATIO TYPE = HW-BOILER  
 \* 405 \*           MIN-RATIO   = 0.2500 MAX-RATIO   = 1.0000  
 \* 406 \*           OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..  
 \* 407 \*  
 \* 408 \* ENERGY-RESOURCE   RESOURCE = ELECTRICITY ..  
 \* 409 \* ENERGY-RESOURCE   RESOURCE = FUEL-OIL ..  
 \* 410 \*  
 \* 411 \* ENERGY-STORAGE   HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51  
 \* 412 \*           HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6  
 \* 413 \*           HEAT-STORE-SCH = heating ..  
 \* 414 \*  
 \* 415 \*  
 \* 416 \*  
 \* 417 \* END ..  
 \* 418 \* COMPUTE PLANT ..  
 \* 419 \* STOP ..



ENERGY TYPE  
 IN SITE MBTU-

CATEGORY OF USE	ELECTRICITY	FUEL-OIL
SPACE HEAT	152.88	3216.97
SPACE COOL	137.42	0.00
HVAC AUX	939.92	0.00
DOM HOT WTR	7.11	157.79
AUX SOLAR	0.00	0.00
LIGHTS	319.53	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	148.24	0.00
	-----	-----
TOTAL	1705.10	3374.75

TOTAL SITE ENERGY 5079.78 MBTU 192.1 KBTU/SQFT-YR GROSS-AREA 192.1 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 8495.00 MBTU 321.3 KBTU/SQFT-YR GROSS-AREA 321.3 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 10.9

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

EMC ENGINEERS INC. EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 3/18/1995 13:28:38 PDL RUN  
 DENVER, CO 80227 BUILDING 36, MEDICAL CENTER (WILCOX) BASE MODEL  
 REPORT- PS-B MONTHLY PEAK AND TOTAL ENERGY USE WEATHER FILE- MASSENA, NY

---

MO	UTILITY-	ELECTRICITY	FUEL OIL
JAN	TOTAL(MBTU)	153.012	653.22
	PEAK(KBTU)	258.942	1545.11
	DY/HR	6/ 7	6/ 6
FEB	TOTAL(MBTU)	134.945	508.952
	PEAK(KBTU)	234.672	1152.937
	DY/HR	5/ 8	5/ 5
MAR	TOTAL(MBTU)	148.032	507.33
	PEAK(KBTU)	233.889	1146.403
	DY/HR	8/18	9/ 5
APR	TOTAL(MBTU)	136.441	293.495
	PEAK(KBTU)	251.021	889.841
	DY/HR	15/18	1/ 5
MAY	TOTAL(MBTU)	138.775	163.931
	PEAK(KBTU)	260.843	704.053
	DY/HR	31/12	3/ 2
JUN	TOTAL(MBTU)	138.557	50.085
	PEAK(KBTU)	264.052	444.895
	DY/HR	28/18	8/ 5
JUL	TOTAL(MBTU)	149.882	32.026
	PEAK(KBTU)	266.578	373.834
	DY/HR	18/12	25/ 5
AUG	TOTAL(MBTU)	146.152	39.196
	PEAK(KBTU)	263.637	366.231
	DY/HR	9/18	22/ 5
SEP	TOTAL(MBTU)	136.259	81.033
	PEAK(KBTU)	266.154	568.801
	DY/HR	4/18	24/ 4
OCT	TOTAL(MBTU)	136.954	184.841
	PEAK(KBTU)	254.161	660.751
	DY/HR	8/18	21/ 6
NOV	TOTAL(MBTU)	137.735	341.866
	PEAK(KBTU)	231.132	911.135
	DY/HR	30/18	27/ 5

DEC	TOTAL(MBTU)	148.305	518.756
	PEAK(KBTU)	233.072	1122.791
	DY/HR	23/ 8	3/ 4
	ONE YEAR	1705.05	3374.731
	USE/PEAK	266.578	1545.11

**COMPUTER SIMULATIONS**  
**BUILDING 36**

**RUN 1 - SCHEDULE START/STOP AND NIGHT SETBACK**

INPUT LOADS ..

```
$-----$  
$ E Z - D O E   L O A D S   I N P U T $  
$-----$
```

\$ GENERAL PROJECT DATA

```
TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *  
        LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*  
        LINE-3 *      DENVER,      CO      80227      *  
  
        LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *  
        LINE-5 *MODEL WITH SET BACK      * ..
```

```
ABORT      ERRORS ..  
DIAGNOSTIC WARNINGS ..  
LOADS-REPORT VERIFICATION=(LV-A,LV-B,LV-C)  
BUILDING-LOCATION SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..  
              LATITUDE = 44.0  
              ALTITUDE = 655.  
              AZIMUTH = -130.  
              TIME-ZONE = 5  
              GROSS-AREA = 26440  
              HOLIDAY = NO  
              SHIELDING-COEF = 0.29  
              X-REF = 0.0  
              Y-REF = 0.0 ..  
RUN-PERIOD  JAN 1 1994 THRU DEC 31 1994 ..
```

\$ SCHEDULES

```
LIGHTS      =DAY-SCHEDULE (1,2) (1.)  
              (3,11) (0.5)  
              (12,13) (0.6)  
              (14,24) (1.) ..  
  
OCCUP        =DAY-SCHEDULE (1,5) (0.)  
              (6,10) (0.1,0.5,0.9,0.8,0.5)  
              (11,14) (0.7,0.9,0.8,0.4)  
              (15,16) (0.3)  
              (17,18) (0.5,0.9)  
              (19,20) (0.7,0.2)  
              (21,24) (0.) ..  
  
APPLIANCE    =DAY-SCHEDULE (1) (0.)  
              (2,3) (0.7)  
              (4,12) (0.02)  
              (13,15) (0.6)  
              (16,18) (0.02)  
              (19,20) (0.7)  
              (21,24) (0.8) ..  
  
CND_DAY      =DAY-SCHEDULE (1,24) (1.) ..  
  
FULL_OFFD    =DAY-SCHEDULE (1,24) (0.) ..  
  
appliance    =DAY-SCHEDULE (1,5) (0.)  
              (6,7) (0.4)  
              (8,11) (0.6)  
              (12,13) (0.8)  
              (14,15) (0.6)  
              (16,17) (0.8)  
              (18,19) (0.6)  
              (20,24) (0.) ..  
  
lights       =DAY-SCHEDULE (1,5) (0.2)  
              (6) (0.5)  
              (7,13) (0.8)  
              (14,15) (0.9)  
              (16,18) (0.8)  
              (19,20) (0.7)  
              (21,24) (0.2) ..  
  
FULL_ON_D    =DAY-SCHEDULE (1,24) (1.) ..  
  
PEOPLE       =WEEK-SCHEDULE (ALL) OCCUP ..  
  
LIGHTS_WK    =WEEK-SCHEDULE (ALL) lights ..  
  
APPLI_WK     =WEEK-SCHEDULE (ALL) appliance ..  
  
CND_WK       =WEEK-SCHEDULE (ALL) CND_DAY ..  
  
FULL_OFFW    =WEEK-SCHEDULE (ALL) FULL_OFFD ..  
  
FULL_ON_W    =WEEK-SCHEDULE (ALL) FULL_ON_D ..  
  
$ FULL ON SCHEDULE  
FULL_ON      =SCHEDULE THRU DEC 31 FULL_ON_W ..  
  
$ LOADS OCCUPANCY SCHED  
OCCUPANCY    =SCHEDULE THRU DEC 31 PEOPLE ..  
  
$ LIGHTING SCHEDULE  
LIGHTS_ON    =SCHEDULE THRU DEC 31 LIGHTS_WK ..  
  
$ APPLIANCE SCHEDULE  
APPLI_ON     =SCHEDULE THRU DEC 31 APPLI_WK ..  
  
$ COND VENTIL SCHED  
CND_SCHED    =SCHEDULE THRU MAR 1 FULL_OFFW  
              THRU NOV 30 CND_WK
```

THRU DEC 31 FULL\_OFFW ..

\$ CONSTRUCTION TYPES

\$ DOOR CONSTRUCTION  
DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
FLOOR =CONSTRUCTION U-VALUE = 0.100  
ABSORPTANCE = 1.000  
ROUGHNESS = 1 ..  
ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
EXWALL =CONSTRUCTION U-VALUE = 0.200  
ABSORPTANCE = 0.750 ..  
INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
GTYPE\_1 =GLASS-TYPE SHADING-COEF = 0.400  
PANES = 1  
GLASS-CONDUCTANCE = 1.130 ..  
GTYPE\_2 =GLASS-TYPE SHADING-COEF = 0.300  
PANES = 1  
GLASS-CONDUCTANCE = 0.790 ..  
GTYPE\_3 =GLASS-TYPE SHADING-COEF = 0.400  
PANES = 1  
GLASS-CONDUCTANCE = 0.360 ..

\$ SPACE DESCRIPTION

SECTIONAB =SPACE AREA = 19740.0 VOLUME = 177660.0  
AZIMUTH = -150 ZONE-TYPE = CONDITIONED  
PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 150.0  
PEOPLE-HEAT-GAIN = 650.0  
LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 12.0  
LIGHTING-SCHEDULE = LIGHTS\_ON  
EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 11.0  
SOURCE-SCHEDULE = FULL\_ON SOURCE-TYPE = HOT-WATER  
SOURCE-BTU/HR = 11500.0 SOURCE-SENSIBLE = 0.1  
SOURCE-LATENT = 0.2 INF-METHOD = AIR-CHANGE  
AIR-CHANGES/HR = 0.33 INF-SCHEDULE = FULL\_ON ..  
I-W HEIGHT = 9.0 WIDTH = 128.0 CONS = INWALL  
AZIMUTH = -150 NEXT-TO = SECTIONC ..  
E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL  
AZIMUTH = 120 ..  
WINDOW HEIGHT = 9.0 WIDTH = 4.0 G-T = GTYPE\_1  
MULTIPLIER = 4.0 ..  
DOOR HEIGHT = 8.0 WIDTH = 7.0 CONS = DOORCON ..  
WINDOW HEIGHT = 9.0 WIDTH = 5.0 G-T = GTYPE\_1 ..  
WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
MULTIPLIER = 14.0 ..  
E-W HEIGHT = 9.0 WIDTH = 128.0 CONS = EXWALL  
AZIMUTH = 30 ..  
DOOR HEIGHT = 8.0 WIDTH = 4.0 CONS = DOORCON ..  
E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL  
AZIMUTH = -60 ..  
WINDOW HEIGHT = 6.0 WIDTH = 4.0 G-T = GTYPE\_1  
MULTIPLIER = 5.0 ..  
DOOR HEIGHT = 7.0 WIDTH = 4.0 CONS = DOORCON ..  
DOOR HEIGHT = 10.0 WIDTH = 20.0 CONS = DOORCON ..  
DOOR HEIGHT = 9.0 WIDTH = 4.0 CONS = DOORCON  
MULTIPLIER = 2.0 ..  
DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..  
DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..  
ROOF HEIGHT = 159.0 WIDTH = 128.0 CONS = ROOFCON  
AZIMUTH = -150 TILT = 0 ..  
U-W HEIGHT = 159.0 WIDTH = 128.0 CONS = FLOOR  
AZIMUTH = -150 ..  
SECTIONC =SPACE AREA = 6700.0 VOLUME = 60300.0  
AZIMUTH = -150 ZONE-TYPE = CONDITIONED  
PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 100.0  
PEOPLE-HEAT-GAIN = 650.0  
LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 7.0  
LIGHTING-SCHEDULE = LIGHTS\_ON  
EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 3.0  
INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.33  
INF-SCHEDULE = FULL\_ON ..  
E-W HEIGHT = 9.0 WIDTH = 108.0 CONS = INWALL  
AZIMUTH = -150 ..  
WINDOW HEIGHT = 9.0 WIDTH = 4.0 G-T = GTYPE\_1  
MULTIPLIER = 4.0 ..  
DOOR HEIGHT = 8.0 WIDTH = 7.5 CONS = DOORCON ..

```

WINDOW HEIGHT = 9.0 WIDTH = 5.0 G-T = GTYPE_1 ..
WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE_1
MULTIPLIER = 14.0 ..
E-W HEIGHT = 9.0 WIDTH = 62.0 CONS = EXWALL
AZIMUTH = 120 ..
E-W HEIGHT = 9.0 WIDTH = 108.0 CONS = EXWALL
AZIMUTH = 30 ..
I-W HEIGHT = 9.0 WIDTH = 62.0 CONS = EXWALL
AZIMUTH = -60 NEXT-TO = SECTIONAB ..
ROOF HEIGHT = 62.0 WIDTH = 108.0 CONS = ROOFCON
AZIMUTH = -150 TILT = 0 ..
U-W HEIGHT = 62.0 WIDTH = 108.0 CONS = FLOOR
AZIMUTH = -150 ..

```

```

END ..
COMPUTE LOADS ..
INPUT SYSTEMS ..

```

```

$-----$
$ E Z - D O E   S Y S T E M S   I N P U T $
$-----$

```

#### \$ GENERAL PROJECT DATA

```

TITLE LINE-1 * EMC ENGINEERS INC. *
LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
LINE-3 * DENVER, CO 80227 *
LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
LINE-5 *MODEL WITH SET BACK * ..
ABORT ERRORS ..
DIAGNOSTIC WARNINGS ..
SYSTEMS-REPORT SUMMARY=(SS-A,SS-B,SS-C) ..

```

#### \$ SCHEDULES

```

D_FULL =DAY-SCHEDULE (1,24) (1.) ..
D_OFF =DAY-SCHEDULE (1,24) (0.) ..
HEAT_68_D =DAY-SCHEDULE (1,24) (68.) ..
COOL_72_D =DAY-SCHEDULE (1,24) (72.) ..
FAN_W_SB_D =DAY-SCHEDULE (1,5) (0.)
(6,15) (1.)
(16,24) (0.) ..
HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
(6,15) (70.)
(16,24) (50.) ..
CL72_WSB_D =DAY-SCHEDULE (1,5) (85.)
(6,15) (72.)
(16,24) (85.) ..
HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
COOL_85_D =DAY-SCHEDULE (1,24) (85.) ..
W_FULL =WEEK-SCHEDULE (ALL) D_FULL ..
W_OFF =WEEK-SCHEDULE (ALL) D_OFF ..
HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
COOL_72_W =WEEK-SCHEDULE (ALL) COOL_72_D ..
FAN_W_SB_W =WEEK-SCHEDULE (WD) FAN_W_SB_D
(SAT) D_OFF
(SUN) D_OFF
(HOL) FAN_W_SB_D ..
HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
(SAT) HEAT_50_D
(SUN) HEAT_50_D
(HOL) HT68_WSB_D ..
CL72_WSB_W =WEEK-SCHEDULE (WD) CL72_WSB_D
(SAT) COOL_85_D
(SUN) COOL_85_D
(HOL) CL72_WSB_D ..
FULL_ON =SCHEDULE THRU DEC 31 W_FULL ..
FULL_OFF =SCHEDULE THRU DEC 31 W_OFF ..
HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
COOL_72 =SCHEDULE THRU DEC 31 COOL_72_W ..
$ FAN WITH SET BACK
FAN_W_SB =SCHEDULE THRU DEC 31 FAN_W_SB_W ..
HT68_WSB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
CL72_WSB =SCHEDULE THRU DEC 31 CL72_WSB_W ..

```

#### \$ ZONE DESCRIPTION

```

SECTIONAB =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0
HEAT-TEMP-SCH = HT68_WSB COOL-TEMP-SCH = CL72_WSB
ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0

```

BASEBOARD-CTRL = THERMOSTATIC  
BASEBOARD-RATING = -261500. ASSIGNED-CFM = 17135.  
OUTSIDE-AIR-CFM = 3925. SIZING-OPTION = FROM-LOADS  
RATED-CFM = 17135.0 ..

SECTIONC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0  
HEAT-TEMP-SCH = HT68\_WSB COOL-TEMP-SCH = CL72\_WSB  
ZONE-TYPE = CONDITIONED  
THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
BASEBOARD-CTRL = THERMOSTATIC  
BASEBOARD-RATING = -83000. ASSIGNED-CFM = 6950.  
OUTSIDE-AIR-CFM = 1200. SIZING-OPTION = FROM-LOADS  
RATED-CFM = 6950.0 ..

\$ SYSTEM DESCRIPTION

SYSTEMAB =SYSTEM SYSTEM-TYPE = SZRH  
MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0  
PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0  
ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0  
OA-CONTROL = FIXED SUPPLY-CFM = 17135.  
RETURN-CFM = 13210. RATED-CFM = 17135.  
MIN-OUTSIDE-AIR = 0.35 FAN-SCHEDULE = FAN\_W\_SB  
SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00118  
MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0  
MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 500000.  
HEATING-CAPACITY = -818500. FURNACE-AUX = 0.  
PREHEAT-SOURCE = HOT-WATER  
ZONE-NAMES = (SECTIONAB) ..

ADDITIONC =SYSTEM SYSTEM-TYPE = SZRH  
MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0  
PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0  
ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0  
OA-CONTROL = FIXED SUPPLY-CFM = 6950.  
RETURN-CFM = 5750. RATED-CFM = 6950.  
MIN-OUTSIDE-AIR = 0.17 FAN-SCHEDULE = FAN\_W\_SB  
SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00081  
MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  
RETURN-STATIC = 1.25 RETURN-EFF = 0.88  
NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0  
COOLING-CAPACITY = 204000.  
HEATING-CAPACITY = -235452. FURNACE-AUX = 0.  
PREHEAT-SOURCE = HOT-WATER  
HUMIDIFIER-TYPE = ELECTRIC  
ZONE-NAMES = (SECTIONC) ..

END ..  
COMPUTE SYSTEMS ..

INPUT PLANT ..

\$-----\$  
\$ E Z - D O E P L A N T S I N P U T \$  
\$-----\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 \* EMC ENGINEERS INC. \*  
LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
LINE-3 \* DENVER, CO 80227 \*  
LINE-4 \*BUILDING 36, MEDICAL CENTER (WILCOX) \*  
LINE-5 \*MODEL WITH SET BACK \* ..

ABORT ERRORS ..  
DIAGNOSTIC WARNINGS ..  
PLANT-REPORT VERIFICATION=(PV-A)  
SUMMARY=(PS-A, PS-B, PS-D, PS-H, PS-I, BEPS) ..

\$ SCHEDULES

DAY\_ON =DAY-SCHEDULE (1,7) (0.)  
(8,18) (1.)  
(19,24) (0.) ..

FULL\_ON =WEEK-SCHEDULE (ALL) DAY\_ON ..

\$ heating plant schedule  
heating =SCHEDULE THRU DEC 31 FULL\_ON ..

\$ EQUIPMENT DESCRIPTION

HW\_BOILER =PLANT-EQUIPMENT TYPE = HW-BOILER  
SIZE = 1. INSTALLED-NUMBER = 2  
MAX-NUMBER-AVAIL = 2 ..

CHILLERS =PLANT-EQUIPMENT TYPE = OPEN-REC-CHLR  
SIZE = 0.3 INSTALLED-NUMBER = 2  
MAX-NUMBER-AVAIL = 2 ..

ADDITION =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR  
SIZE = 0.2 ..

PLANT-PARAMETERS  
BOILER-CONTROL = STANDBY MAKEUP-WTR-T = 50.  
STM-BOILER-HIR = 0.76 HW-BOILER-HIR = 1.27  
CHILLER-CONTROL = STANDBY OPEN-REC-COND-TYPE = AIR  
HERM-REC-COND-TYPE = AIR COMP-TO-TWR-WTR = 2.77  
CCIRC-HEAD = 100.0 HCIRC-HEAD = 70.0 ..



PART-LOAD-RATIO TYPE = HW-BOILER  
MIN-RATIO = 0.2500 MAX-RATIO = 1.0000  
OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..

ENERGY-RESOURCE RESOURCE = ELECTRICITY ..  
ENERGY-RESOURCE RESOURCE = FUEL-OIL ..

ENERGY-STORAGE HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51  
HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6  
HEAT-STORE-SCH = heating ..

END ..  
COMPUTE PLANT ..  
STOP ..

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	55.21	1,604.77
SPACE COOL	111.06	0.00
HVAC AUX	421.84	0.00
DOM HOT WTR	8.11	163.12
AUX SOLAR	0.00	0.00
LIGHTS	319.54	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	148.25	0.00
	-----	-----
TOTAL	1,064.01	1,767.89

TOTAL SITE ENERGY 2831.87 MBTU 107.1 KBTU/SQFT-YR GROSS-AREA 107.1 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 4962.97 MBTU 187.7 KBTU/SQFT-YR GROSS-AREA 187.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 2.8  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 5.9

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

EMC ENGINEERS INC. EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 3/27/1995 13:13:48 PDL RUN 1  
DENVER, CO 80227 BUILDING 36, MEDICAL CENTER (WILCOX) MODEL WITH SET BACK WEATHER FILE- MASSENA, NY  
REPORT- PS-B MONTHLY PEAK AND TOTAL ENERGY USE

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	92.611	347.711
JAN	PEAK (KBTU)	270.525	2262.462
	DY/HR	5/12	24/ 6
	TOTAL (MBTU)	82.241	261.440
FEB	PEAK (KBTU)	262.313	2169.392
	DY/HR	4/ 9	14/ 6
	TOTAL (MBTU)	90.965	264.035
MAR	PEAK (KBTU)	259.891	2041.857
	DY/HR	28/ 8	28/ 6
	TOTAL (MBTU)	84.529	152.647
APR	PEAK (KBTU)	240.778	1672.403
	DY/HR	4/ 7	4/ 6
	TOTAL (MBTU)	86.899	91.392
MAY	PEAK (KBTU)	266.450	1191.631
	DY/HR	31/12	2/ 6
	TOTAL (MBTU)	88.038	33.505
JUN	PEAK (KBTU)	268.793	516.865
	DY/HR	28/12	8/ 6
	TOTAL (MBTU)	95.320	28.018
JUL	PEAK (KBTU)	272.129	280.625
	DY/HR	18/12	25/ 6
	TOTAL (MBTU)	95.103	29.070
AUG	PEAK (KBTU)	268.777	298.103
	DY/HR	9/12	25/ 6
	TOTAL (MBTU)	87.175	44.045
SEP	PEAK (KBTU)	270.861	641.512
	DY/HR	2/12	23/ 6
	TOTAL (MBTU)	85.357	97.164
OCT	PEAK (KBTU)	237.891	936.710
	DY/HR	31/ 8	28/ 6
	TOTAL (MBTU)	85.763	167.459
NOV	PEAK (KBTU)	259.891	1939.039
	DY/HR	28/ 8	28/ 6
	TOTAL (MBTU)	89.949	251.433
DEC	PEAK (KBTU)	261.347	1987.531
	DY/HR	23/ 8	19/ 6
	ONE YEAR	1063.952	1767.921
	USE/PEAK	272.129	2262.462

LDL PROCESSOR INPUT DATA

3/18/1995 16: 9:36 LDL RUN 1

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* 3 *
* 4 *
* 5 *
* 6 *          $-----$
* 7 *          $EZ - DOE LOADS INPUT $
* 8 *          $-----$
* 9 *
* 10 *          $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOS - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
* 16 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT VERIFICATION=(LV-A,LV-B,LV-C)
* 21 * SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..
* 22 * BUILDING-LOCATION LATITUDE = 44.0
* 23 * ALTITUDE = 655.
* 24 * AZIMUTH = -130.
* 25 * TIME-ZONE = 5
* 26 * GROSS-AREA = 26440
* 27 * HOLIDAY = NO
* 28 * SHIELDING-COEF = 0.29
* 29 * X-REF = 0.0
* 30 * Y-REF = 0.0 ..
* 31 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 32 *
* 33 *
* 34 *          $ SCHEDULES
* 35 *
* 36 * LIGHTS =DAY-SCHEDULE (1,2) (1.)
* 37 * (3,11) (0.5)
* 38 * (12,13) (0.6)
* 39 * (14,24) (1.) ..
* 40 *
* 41 * OCCUP =DAY-SCHEDULE (1,5) (0.)
* 42 * (6,10) (0.1,0.5,0.9,0.8,0.5)
* 43 * (11,14) (0.7,0.9,0.8,0.4)
* 44 * (15,16) (0.3)
* 45 * (17,18) (0.5,0.9)
* 46 * (19,20) (0.7,0.2)
* 47 * (21,24) (0.) ..
* 48 *
* 49 * APPLIANCE =DAY-SCHEDULE (1) (0.)
* 50 * (2,3) (0.7)
* 51 * (4,12) (0.02)
* 52 * (13,15) (0.6)
* 53 * (16,18) (0.02)
* 54 * (19,20) (0.7)
* 55 * (21,24) (0.8) ..
* 56 *
* 57 * CND_DAY =DAY-SCHEDULE (1,24) (1.) ..
* 58 *
* 59 * FULL_OFFD =DAY-SCHEDULE (1,24) (0.) ..
* 60 *
* 61 * appliance =DAY-SCHEDULE (1,5) (0.)
* 62 * (6,7) (0.4)
* 63 * (8,11) (0.6)
* 64 * (12,13) (0.8)
* 65 * (14,15) (0.6)
* 66 * (16,17) (0.8)
* 67 * (18,19) (0.6)
* 68 * (20,24) (0.) ..
* 69 *
* 70 * lights =DAY-SCHEDULE (1,5) (0.2)
* 71 * (6) (0.5)
* 72 * (7,13) (0.8)
* 73 * (14,15) (0.9)
* 74 * (16,18) (0.8)
* 75 * (19,20) (0.7)
* 76 * (21,24) (0.2) ..
* 77 *
* 78 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 79 *
* 80 *
* 81 * PEOPLE =WEEK-SCHEDULE (ALL) OCCUP ..
* 82 *
* 83 * LIGHTS_WK =WEEK-SCHEDULE (ALL) lights ..
* 84 *
* 85 * APPLI_WK =WEEK-SCHEDULE (ALL) appliance ..
* 86 *
* 87 * CND_WK =WEEK-SCHEDULE (ALL) CND_DAY ..
* 88 *
* 89 * FULL_OFFW =WEEK-SCHEDULE (ALL) FULL_OFFD ..
* 90 *
* 91 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 92 *
* 93 *
* 94 * $ FULL_ON SCHEDULE
* 95 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 96 *
* 97 * $ LOADS OCCUPANCY SCHED
* 98 * OCCUPANCY =SCHEDULE THRU DEC 31 PEOPLE ..
* 99 *
* 100 * $ LIGHTING SCHEDULE
* 101 * LIGHTS_ON =SCHEDULE THRU DEC 31 LIGHTS_WK ..
* 102 *

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* 103 * $ APPLIANCE SCHEDULE
* 104 * APPLI_ON =SCHEDULE THRU DEC 31 APPLI_WK ..
* 105 *
* 106 * $ COND VENTIL SCHED
* 107 * CND_SCHED =SCHEDULE THRU MAR 1 FULL_OFFW
* 108 * THRU NOV 30 CND_WK
* 109 * THRU DEC 31 FULL_OFFW ..
* 110 *
* 111 *
* 112 *
* 113 *
* 114 * $ CONSTRUCTION TYPES
* 115 *
* 116 *
* 117 *
* 118 * $ DOOR CONSTRUCTION
* 119 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 120 * FLOOR =CONSTRUCTION U-VALUE = 0.100
* 121 * ABSORPTANCE = 1.000
* 122 * ROUGHNESS = 1 ..
* 123 * ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..
* 124 * EXWALL =CONSTRUCTION U-VALUE = 0.200
* 125 * ABSORPTANCE = 0.750 ..
* 126 * INWALL =CONSTRUCTION U-VALUE = 0.500 ..
* 127 *
* 128 * GTYPE_1 =GLASS-TYPE SHADING-COEF = 0.400
* 129 * PANES = 1
* 130 * GLASS-CONDUCTANCE = 1.130 ..
* 131 * GTYPE_2 =GLASS-TYPE SHADING-COEF = 0.300
* 132 * PANES = 1
* 133 * GLASS-CONDUCTANCE = 0.790 ..
* 134 * GTYPE_3 =GLASS-TYPE SHADING-COEF = 0.400
* 135 * PANES = 1
* 136 * GLASS-CONDUCTANCE = 0.360 ..
* 137 *
* 138 *
* 139 *
* 140 *
* 141 * $ SPACE DESCRIPTION
* 142 *
* 143 * SECTIONAB =SPACE AREA = 19740.0 VOLUME = 177660.0
* 144 * AZIMUTH = -150 ZONE-TYPE = CONDITIONED
* 145 * PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 150.0
* 146 * PEOPLE-HEAT-GAIN = 650.0
* 147 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 12.0
* 148 * LIGHTING-SCHEDULE = LIGHTS_ON
* 149 * EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 11.0
* 150 * SOURCE-SCHEDULE = FULL ON SOURCE-TYPE = HOT-WATER
* 151 * SOURCE-BTU/HR = 11500.0 SOURCE-SENSIBLE = 0.1
* 152 * SOURCE-LATENT = 0.2 INF-METHOD = AIR-CHANGE
* 153 * AIR-CHANGES/HR = 0.33 INF-SCHEDULE = FULL_ON ..
* 154 *
* 155 * I-W HEIGHT = 9.0 WIDTH = 128.0 CONS = INWALL
* 156 * AZIMUTH = -150 NEXT-TO = SECTIONC ..
* 157 *
* 158 * E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL
* 159 * AZIMUTH = 120 ..
* 160 *
* 161 * WINDOW HEIGHT = 9.0 WIDTH = 4.0 G-T = GTYPE_1
* 162 * MULTIPLIER = 4.0 ..
* 163 *
* 164 * DOOR HEIGHT = 8.0 WIDTH = 7.0 CONS = DOORCON ..
* 165 *
* 166 * WINDOW HEIGHT = 9.0 WIDTH = 5.0 G-T = GTYPE_1 ..
* 167 *
* 168 * WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE_1
* 169 * MULTIPLIER = 14.0 ..
* 170 *
* 171 * E-W HEIGHT = 9.0 WIDTH = 128.0 CONS = EXWALL
* 172 * AZIMUTH = 30 ..
* 173 *
* 174 * DOOR HEIGHT = 8.0 WIDTH = 4.0 CONS = DOORCON ..
* 175 *
* 176 * E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL
* 177 * AZIMUTH = -60 ..
* 178 *
* 179 * WINDOW HEIGHT = 6.0 WIDTH = 4.0 G-T = GTYPE_1
* 180 * MULTIPLIER = 5.0 ..
* 181 *
* 182 * DOOR HEIGHT = 7.0 WIDTH = 4.0 CONS = DOORCON ..
* 183 *
* 184 * DOOR HEIGHT = 10.0 WIDTH = 20.0 CONS = DOORCON ..
* 185 *
* 186 * DOOR HEIGHT = 9.0 WIDTH = 4.0 CONS = DOORCON
* 187 * MULTIPLIER = 2.0 ..
* 188 *
* 189 * DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..
* 190 *
* 191 * DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..
* 192 *
* 193 * ROOF HEIGHT = 159.0 WIDTH = 128.0 CONS = ROOFCON
* 194 * AZIMUTH = -150 TILT = 0 ..
* 195 *
* 196 * U-W HEIGHT = 159.0 WIDTH = 128.0 CONS = FLOOR
* 197 * AZIMUTH = -150 ..
* 198 *
* 199 *
* 200 * SECTIONC =SPACE AREA = 6700.0 VOLUME = 60300.0
* 201 * AZIMUTH = -150 ZONE-TYPE = CONDITIONED
* 202 * PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 100.0
* 203 * PEOPLE-HEAT-GAIN = 650.0
* 204 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 7.0
* 205 * LIGHTING-SCHEDULE = LIGHTS_ON
* 206 * EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 3.0
* 207 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.33
* 208 * INF-SCHEDULE = FULL_ON ..
* 209 *
* 210 * E-W HEIGHT = 9.0 WIDTH = 108.0 CONS = INWALL

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* 211 *          AZIMUTH = -150  ..
* 212 *
* 213 *          WINDOW HEIGHT = 9.0  WIDTH = 4.0  G-T = GTYPE_1
* 214 *          MULTIPLIER = 4.0  ..
* 215 *
* 216 *          DOOR  HEIGHT = 8.0  WIDTH = 7.5  CONS = DOORCON ..
* 217 *
* 218 *          WINDOW HEIGHT = 9.0  WIDTH = 5.0  G-T = GTYPE_1 ..
* 219 *
* 220 *          WINDOW HEIGHT = 5.0  WIDTH = 4.0  G-T = GTYPE_1
* 221 *          MULTIPLIER = 14.0  ..
* 222 *
* 223 *          E-W    HEIGHT = 9.0  WIDTH = 62.0  CONS = EXWALL
* 224 *          AZIMUTH = 120  ..
* 225 *
* 226 *          E-W    HEIGHT = 9.0  WIDTH = 108.0  CONS = EXWALL
* 227 *          AZIMUTH = 30  ..
* 228 *
* 229 *          I-W    HEIGHT = 9.0  WIDTH = 62.0  CONS = EXWALL
* 230 *          AZIMUTH = -60  NEXT-TO = SECTIONAB  ..
* 231 *
* 232 *          ROOF   HEIGHT = 62.0  WIDTH = 108.0  CONS = ROOFCON
* 233 *          AZIMUTH = -150  TILT = 0  ..
* 234 *
* 235 *          U-W    HEIGHT = 62.0  WIDTH = 108.0  CONS = FLOOR
* 236 *          AZIMUTH = -150  ..
* 237 *
* 238 *
* 239 * END  ..
* 240 * COMPUTE LOADS  ..
* 241 *
* 242 * INPUT SYSTEMS  ..

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SDL PROCESSOR INPUT DATA

3/18/1995 16: 9:36 SDL RUN 1

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* 243 *
* 244 *
* 245 *      $-----$
* 246 *      $ EZ - DOE SYSTEMS INPUT $
* 247 *      $-----$
* 248 *
* 249 *      $ GENERAL PROJECT DATA
* 250 *
* 251 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 252 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 253 * LINE-3 * DENVER, CO 80227 *
* 254 *
* 255 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
* 256 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 257 * ABORT ERRORS ..
* 258 * DIAGNOSTIC WARNINGS ..
* 259 * SYSTEMS-REPORT VERIFICATION=(SV-A,SV-B)
* 260 * SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-E,SS-F,SS-G,
* 261 * SS-H,SS-I,SS-J,SS-K,SS-L,SS-M,SS-N,
* 262 * SS-O) ..
* 263 *
* 264 *      $ SCHEDULES
* 265 *
* 266 * D_FULL =DAY-SCHEDULE (1,24) (1.) ..
* 267 * D_OFF =DAY-SCHEDULE (1,24) (0.) ..
* 268 * HEAT_68_D =DAY-SCHEDULE (1,24) (68.) ..
* 269 * COOL_72_D =DAY-SCHEDULE (1,24) (78.) ..
* 270 * FAN_W_SB_D =DAY-SCHEDULE (1,5) (0.)
* 271 * (6,15) (1.)
* 272 * (16,24) (0.) ..
* 273 * HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
* 274 * (6,15) (68.)
* 275 * (16,24) (50.) ..
* 276 * CL72_WSB_D =DAY-SCHEDULE (1,5) (85.)
* 277 * (6,15) (78.)
* 278 * (16,24) (85.) ..
* 279 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 280 * COOL_85_D =DAY-SCHEDULE (1,24) (85.) ..
* 281 *
* 282 * W_FULL =WEEK-SCHEDULE (ALL) D_FULL ..
* 283 *
* 284 * W_OFF =WEEK-SCHEDULE (ALL) D_OFF ..
* 285 *
* 286 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 287 *
* 288 * COOL_72_W =WEEK-SCHEDULE (ALL) COOL_72_D ..
* 289 *
* 290 * FAN_W_SB_W =WEEK-SCHEDULE (WD) FAN_W_SB_D
* 291 * (SAT) D_OFF
* 292 * (SUN) D_OFF
* 293 * (HOL) FAN_W_SB_D ..
* 294 *
* 295 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 296 * (SAT) HEAT_50_D
* 297 * (SUN) HEAT_50_D
* 298 * (HOL) HT68_WSB_D ..
* 299 *
* 300 * CL72_WSB_W =WEEK-SCHEDULE (WD) CL72_WSB_D
* 301 * (SAT) COOL_85_D
* 302 * (SUN) COOL_85_D
* 303 * (HOL) CL72_WSB_D ..
* 304 *
* 305 *
* 306 * FULL_ON =SCHEDULE THRU DEC 31 W_FULL ..
* 307 *
* 308 * FULL_OFF =SCHEDULE THRU DEC 31 W_OFF ..
* 309 *
* 310 * HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 311 *
* 312 * COOL_72 =SCHEDULE THRU DEC 31 COOL_72_W ..
* 313 *
* 314 * $ FAN WITH SET BACK
* 315 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_W_SB_W ..
* 316 *
* 317 * HT68_WSB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 318 *
* 319 * CL72_WSB =SCHEDULE THRU DEC 31 CL72_WSB_W ..
* 320 *
* 321 *
* 322 *
* 323 *      $ ZONE DESCRIPTION
* 324 *
* 325 * SECTIONAB =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0
* 326 * HEAT-TEMP-SCH = HT68_WSB COOL-TEMP-SCH = CL72_WSB
* 327 * ZONE-TYPE = CONDITIONED
* 328 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 329 * BASEBOARD-CTRL = THERMOSTATIC
* 330 * BASEBOARD-RATING = -261500. ASSIGNED-CFM = 17135.
* 331 * OUTSIDE-AIR-CFM = 3925. SIZING-OPTION = FROM-LOADS
* 332 * RATED-CFM = 17135.0 ..
* 333 *
* 334 * SECTIONC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0
* 335 * HEAT-TEMP-SCH = HT68_WSB COOL-TEMP-SCH = CL72_WSB
* 336 * ZONE-TYPE = CONDITIONED
* 337 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 338 * BASEBOARD-CTRL = THERMOSTATIC
* 339 * BASEBOARD-RATING = -83000. ASSIGNED-CFM = 6950.
* 340 * OUTSIDE-AIR-CFM = 1200. SIZING-OPTION = FROM-LOADS
* 341 * RATED-CFM = 6950.0 ..
* 342 *

```

```

* 343 *
* 344 *
* 345 *           $ SYSTEM DESCRIPTION
* 346 * SYSTEMAB  =SYSTEM  SYSTEM-TYPE = SZRH
* 347 *           MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
* 348 *           PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0
* 349 *           ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0
* 350 *           OA-CONTROL = FIXED SUPPLY-CFM = 17135.
* 351 *           RETURN-CFM = 13210. RATED-CFM = 17135.
* 352 *           MIN-OUTSIDE-AIR = 0.35 FAN-SCHEDULE = FAN_W_SB
* 353 *           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00118
* 354 *           MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 355 *           NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 356 *           MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 500000.
* 357 *           HEATING-CAPACITY = -818500. FURNACE-AUX = 0.
* 358 *           PREHEAT-SOURCE = HOT-WATER
* 359 *           ZONE-NAMES = (SECTIONAB) ..
* 360 *
* 361 * ADDITIONC  =SYSTEM  SYSTEM-TYPE = SZRH
* 362 *           MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
* 363 *           PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0
* 364 *           ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0
* 365 *           OA-CONTROL = FIXED SUPPLY-CFM = 6950.
* 366 *           RETURN-CFM = 5750. RATED-CFM = 6950.
* 367 *           MIN-OUTSIDE-AIR = 0.17 FAN-SCHEDULE = FAN_W_SB
* 368 *           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00081
* 369 *           MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 370 *           NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 371 *           RETURN-STATIC = 1.25 RETURN-EFF = 0.88
* 372 *           NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
* 373 *           COOLING-CAPACITY = 204000.
* 374 *           HEATING-CAPACITY = -235452. FURNACE-AUX = 0.
* 375 *           PREHEAT-SOURCE = HOT-WATER
* 376 *           HUMIDIFIER-TYPE = ELECTRIC
* 377 *           ZONE-NAMES = (SECTIONC) ..
* 378 *
* 379 * END ..
* 380 * COMPUTE SYSTEMS ..
* 381 *
* 382 * INPUT PLANT ..

```



PDL PROCESSOR INPUT DATA

3/18/1995 16: 9:36 PDL RUN 1

```

* 383 *
* 384 *
* 385 *
* 386 *      $-----$
* 387 *      $ E Z - D O E   P L A N T S   I N P U T $
* 388 *      $-----$
* 389 *
* 390 *      $ GENERAL PROJECT DATA
* 391 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 392 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 393 *      LINE-3 *      DENVER,      CO      80227      *
* 394 *
* 395 *      LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX)      *
* 396 *      LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 397 *
* 398 * ABORT      ERRORS ..
* 399 * DIAGNOSTIC  WARNINGS ..
* 400 * PLANT-REPORT VERIFICATION= (PV-A)
* 401 *      SUMMARY= (PS-A, PS-B, PS-D, PS-H, PS-I, BEPS) ..
* 402 *
* 403 *      $ SCHEDULES
* 404 *
* 405 * DAY_ON      =DAY-SCHEDULE (1,7) (0.)
* 406 *      (8,18) (1.)
* 407 *      (19,24) (0.) ..
* 408 *
* 409 *
* 410 * FULL_ON      =WEEK-SCHEDULE (ALL) DAY_ON ..
* 411 *
* 412 *
* 413 * $ heating plant schedule
* 414 * heating      =SCHEDULE THRU DEC 31 FULL_ON ..
* 415 *
* 416 *
* 417 *
* 418 *      $ EQUIPMENT DESCRIPTION
* 419 *
* 420 * HW_BOILER    =PLANT-EQUIPMENT TYPE = HW-BOILER
* 421 *      SIZE = 1. INSTALLED-NUMBER = 2
* 422 *      MAX-NUMBER-AVAIL = 2 ..
* 423 *
* 424 * CHILLERS      =PLANT-EQUIPMENT TYPE = OPEN-REC-CHLR
* 425 *      SIZE = 0.3 INSTALLED-NUMBER = 2
* 426 *      MAX-NUMBER-AVAIL = 2 ..
* 427 *
* 428 * ADDITION      =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR
* 429 *      SIZE = 0.2 ..
* 430 *
* 431 * PLANT-PARAMETERS BOILER-CONTROL = STANDBY MAKEUP-WTR-T = 50.
* 432 *      STM-BOILER-HIR = 0.76 HW-BOILER-HIR = 1.27
* 433 *      CHILLER-CONTROL = STANDBY OPEN-REC-COND-TYPE = AIR
* 434 *      HERM-REC-COND-TYPE = AIR COMP-TO-TWR-WTR = 2.77
* 435 *      CCIRC-HEAD = 100.0 HCIRC-HEAD = 70.0 ..
* 436 *
* 437 *
* 438 * PART-LOAD-RATIO TYPE = HW-BOILER
* 439 *      MIN-RATIO      = 0.2500 MAX-RATIO      = 1.0000
* 440 *      OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..
* 441 *
* 442 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 443 * ENERGY-RESOURCE RESOURCE = FUEL-OIL ..
* 444 *
* 445 * ENERGY-STORAGE HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51
* 446 *      HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6
* 447 *      HEAT-STORE-SCH = heating ..
* 448 *
* 449 *
* 450 *
* 451 * END ..
* 452 * COMPUTE PLANT ..
* 453 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	51.02	1,476.55
SPACE COOL	70.45	0.00
HVAC AUX	390.74	0.00
DOM HOT WTR	8.16	163.40
AUX SOLAR	0.00	0.00
LIGHTS	319.53	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	148.24	0.00
	-----	-----
TOTAL	988.14	1,639.96

TOTAL SITE ENERGY 2627.97 MBTU 99.4 KBTU/SQFT-YR GROSS-AREA 99.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 4607.21 MBTU 174.3 KBTU/SQFT-YR GROSS-AREA 174.3 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.9  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 1.5

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	87.964	333.986
JAN	PEAK (KBTU)	262.145	2187.135
	DY/HR	5/12	24/ 6
	TOTAL (MBTU)	78.080	248.818
FEB	PEAK (KBTU)	254.265	2073.191
	DY/HR	28/ 8	14/ 6
	TOTAL (MBTU)	86.407	249.467
MAR	PEAK (KBTU)	254.265	1942.342
	DY/HR	28/ 8	28/ 6
	TOTAL (MBTU)	80.161	139.501
APR	PEAK (KBTU)	232.265	1559.475
	DY/HR	29/12	4/ 6
	TOTAL (MBTU)	81.196	77.946
MAY	PEAK (KBTU)	232.265	1089.544
	DY/HR	20/ 8	2/ 6
	TOTAL (MBTU)	78.523	27.569
JUN	PEAK (KBTU)	264.036	371.782
	DY/HR	29/12	8/ 6
	TOTAL (MBTU)	84.555	26.665
JUL	PEAK (KBTU)	268.525	35.840
	DY/HR	18/12	31/ 1
	TOTAL (MBTU)	84.196	26.665
AUG	PEAK (KBTU)	265.207	35.840
	DY/HR	9/12	31/ 1
	TOTAL (MBTU)	79.705	34.159
SEP	PEAK (KBTU)	267.256	537.079
	DY/HR	2/12	23/ 6
	TOTAL (MBTU)	80.577	83.379
OCT	PEAK (KBTU)	232.265	877.132
	DY/HR	31/ 8	28/ 6
	TOTAL (MBTU)	81.505	154.517
NOV	PEAK (KBTU)	254.265	1840.654
	DY/HR	28/ 8	28/ 6
	TOTAL (MBTU)	85.267	237.162
DEC	PEAK (KBTU)	254.265	1892.755
	DY/HR	28/ 8	19/ 6
	ONE YEAR	988.136	1639.834
	USE/PEAK	268.525	2187.135

**COMPUTER SIMULATIONS**  
**BUILDING 36**

**RUN 4 - FORCED VENTILATION**

LDL PROCESSOR INPUT DATA

3/25/1995 9:30:55 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $EZ - DOE LOADS INPUT $
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
* 16 * LINE-5 *MODEL W SB, DDC, & FORCED VENTILATION * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT VERIFICATION=(LV-A,LV-B,LV-C)
* 21 * SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..
* 22 * BUILDING-LOCATION LATITUDE = 44.0
* 23 * ALTITUDE = 655.
* 24 * AZIMUTH = -130.
* 25 * TIME-ZONE = 5
* 26 * GROSS-AREA = 26440
* 27 * HOLIDAY = NO
* 28 * SHIELDING-COEF = 0.29
* 29 * X-REF = 0.0
* 30 * Y-REF = 0.0 ..
* 31 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 32 *
* 33 *
* 34 * $ SCHEDULES
* 35 *
* 36 * LIGHTS =DAY-SCHEDULE (1,2) (1.)
* 37 * (3,11) (0.5)
* 38 * (12,13) (0.6)
* 39 * (14,24) (1.) ..
* 40 *
* 41 * OCCUP =DAY-SCHEDULE (1,5) (0.)
* 42 * (6,10) (0.1,0.5,0.9,0.8,0.5)
* 43 * (11,14) (0.7,0.9,0.8,0.4)
* 44 * (15,16) (0.3)
* 45 * (17,18) (0.5,0.9)
* 46 * (19,20) (0.7,0.2)
* 47 * (21,24) (0.) ..
* 48 *
* 49 * APPLIANCE =DAY-SCHEDULE (1) (0.)
* 50 * (2,3) (0.7)
* 51 * (4,12) (0.02)
* 52 * (13,15) (0.6)
* 53 * (16,18) (0.02)
* 54 * (19,20) (0.7)
* 55 * (21,24) (0.8) ..
* 56 *
* 57 * CND_DAY =DAY-SCHEDULE (1,24) (1.) ..
* 58 *
* 59 * FULL_OFFD =DAY-SCHEDULE (1,24) (0.) ..
* 60 *
* 61 * appliance =DAY-SCHEDULE (1,5) (0.)
* 62 * (6,7) (0.4)
* 63 * (8,11) (0.6)
* 64 * (12,13) (0.8)
* 65 * (14,15) (0.6)
* 66 * (16,17) (0.8)
* 67 * (18,19) (0.6)
* 68 * (20,24) (0.) ..
* 69 *
* 70 * lights =DAY-SCHEDULE (1,5) (0.2)
* 71 * (6) (0.5)
* 72 * (7,13) (0.8)
* 73 * (14,15) (0.9)
* 74 * (16,18) (0.8)
* 75 * (19,20) (0.7)
* 76 * (21,24) (0.2) ..
* 77 *
* 78 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 79 *
* 80 *
* 81 * PEOPLE =WEEK-SCHEDULE (ALL) OCCUP ..
* 82 *
* 83 * LIGHTS_WK =WEEK-SCHEDULE (ALL) lights ..
* 84 *
* 85 * APPLI_WK =WEEK-SCHEDULE (ALL) appliance ..
* 86 *
* 87 * CND_WK =WEEK-SCHEDULE (ALL) CND_DAY ..
* 88 *
* 89 * FULL_OFFW =WEEK-SCHEDULE (ALL) FULL_OFFD ..
* 90 *
* 91 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 92 *
* 93 *
* 94 * $ FULL_ON SCHEDULE
* 95 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 96 *
* 97 * $ LOADS OCCUPANCY SCHED
* 98 * OCCUPANCY =SCHEDULE THRU DEC 31 PEOPLE ..
* 99 *
* 100 * $ LIGHTING SCHEDULE
* 101 * LIGHTS_ON =SCHEDULE THRU DEC 31 LIGHTS_WK ..
* 102 *

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* 103 * $ APPLIANCE SCHEDULE
* 104 * APPLI_ON =SCHEDULE THRU DEC 31 APPLI_WK ..
* 105 *
* 106 * $ COND VENTIL SCHED
* 107 * CND_SCHED =SCHEDULE THRU MAR 1 FULL_OFFW
* 108 * THRU NOV 30 CND_WK
* 109 * THRU DEC 31 FULL_OFFW ..
* 110 *
* 111 *
* 112 *
* 113 * $ CONSTRUCTION TYPES
* 114 *
* 115 *
* 116 *
* 117 *
* 118 * $ DOOR CONSTRUCTION
* 119 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 120 * FLOOR =CONSTRUCTION U-VALUE = 0.100
* 121 * ABSORPTANCE = 1.000
* 122 * ROUGHNESS = 1 ..
* 123 * ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..
* 124 * EXWALL =CONSTRUCTION U-VALUE = 0.200
* 125 * ABSORPTANCE = 0.750 ..
* 126 * INWALL =CONSTRUCTION U-VALUE = 0.500 ..
* 127 *
* 128 * GTYPE_1 =GLASS-TYPE SHADING-COEF = 0.400
* 129 * PANES = 1
* 130 * GLASS-CONDUCTANCE = 1.130 ..
* 131 * GTYPE_2 =GLASS-TYPE SHADING-COEF = 0.300
* 132 * PANES = 1
* 133 * GLASS-CONDUCTANCE = 0.790 ..
* 134 * GTYPE_3 =GLASS-TYPE SHADING-COEF = 0.400
* 135 * PANES = 1
* 136 * GLASS-CONDUCTANCE = 0.360 ..
* 137 *
* 138 *
* 139 *
* 140 *
* 141 * $ SPACE DESCRIPTION
* 142 *
* 143 * SECTIONAB =SPACE AREA = 19740.0 VOLUME = 177660.0
* 144 * AZIMUTH = -150 ZONE-TYPE = CONDITIONED
* 145 * PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 150.0
* 146 * PEOPLE-HEAT-GAIN = 650.0
* 147 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 12.0
* 148 * LIGHTING-SCHEDULE = LIGHTS_ON
* 149 * EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 11.0
* 150 * SOURCE-SCHEDULE = FULL_ON SOURCE-TYPE = HOT-WATER
* 151 * SOURCE-BTU/HR = 11500.0 SOURCE-SENSIBLE = 0.1
* 152 * SOURCE-LATENT = 0.2 INF-METHOD = AIR-CHANGE
* 153 * AIR-CHANGES/HR = 0.33 INF-SCHEDULE = FULL_ON ..
* 154 *
* 155 * I-W HEIGHT = 9.0 WIDTH = 128.0 CONS = INWALL
* 156 * AZIMUTH = -150 NEXT-TO = SECTIONC ..
* 157 *
* 158 * E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL
* 159 * AZIMUTH = 120 ..
* 160 *
* 161 * WINDOW HEIGHT = 9.0 WIDTH = 4.0 G-T = GTYPE_1
* 162 * MULTIPLIER = 4.0 ..
* 163 *
* 164 * DOOR HEIGHT = 8.0 WIDTH = 7.0 CONS = DOORCON ..
* 165 *
* 166 * WINDOW HEIGHT = 9.0 WIDTH = 5.0 G-T = GTYPE_1 ..
* 167 *
* 168 * WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE_1
* 169 * MULTIPLIER = 14.0 ..
* 170 *
* 171 * E-W HEIGHT = 9.0 WIDTH = 128.0 CONS = EXWALL
* 172 * AZIMUTH = 30 ..
* 173 *
* 174 * DOOR HEIGHT = 8.0 WIDTH = 4.0 CONS = DOORCON ..
* 175 *
* 176 * E-W HEIGHT = 9.0 WIDTH = 159.0 CONS = EXWALL
* 177 * AZIMUTH = -60 ..
* 178 *
* 179 * WINDOW HEIGHT = 6.0 WIDTH = 4.0 G-T = GTYPE_1
* 180 * MULTIPLIER = 5.0 ..
* 181 *
* 182 * DOOR HEIGHT = 7.0 WIDTH = 4.0 CONS = DOORCON ..
* 183 *
* 184 * DOOR HEIGHT = 10.0 WIDTH = 20.0 CONS = DOORCON ..
* 185 *
* 186 * DOOR HEIGHT = 9.0 WIDTH = 4.0 CONS = DOORCON
* 187 * MULTIPLIER = 2.0 ..
* 188 *
* 189 * DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..
* 190 *
* 191 * DOOR HEIGHT = 9.0 WIDTH = 6.0 CONS = DOORCON ..
* 192 *
* 193 * ROOF HEIGHT = 159.0 WIDTH = 128.0 CONS = ROOFCON
* 194 * AZIMUTH = -150 TILT = 0 ..
* 195 *
* 196 * U-W HEIGHT = 159.0 WIDTH = 128.0 CONS = FLOOR
* 197 * AZIMUTH = -150 ..
* 198 *
* 199 *
* 200 * SECTIONC =SPACE AREA = 6700.0 VOLUME = 60300.0
* 201 * AZIMUTH = -150 ZONE-TYPE = CONDITIONED
* 202 * PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 100.0
* 203 * PEOPLE-HEAT-GAIN = 650.0
* 204 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 7.0
* 205 * LIGHTING-SCHEDULE = LIGHTS_ON
* 206 * EQUIP-SCHEDULE = OCCUPANCY EQUIPMENT-KW = 3.0
* 207 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.33
* 208 * INF-SCHEDULE = FULL_ON ..
* 209 *
* 210 * E-W HEIGHT = 9.0 WIDTH = 108.0 CONS = INWALL

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* 211 *           AZIMUTH = -150  ..
* 212 *
* 213 *   WINDOW HEIGHT = 9.0  WIDTH = 4.0  G-T = GTYPE_1
* 214 *   MULTIPLIER = 4.0  ..
* 215 *
* 216 *   DOOR  HEIGHT = 8.0  WIDTH = 7.5  CONS = DOORCON ..
* 217 *
* 218 *   WINDOW HEIGHT = 9.0  WIDTH = 5.0  G-T = GTYPE_1 ..
* 219 *
* 220 *   WINDOW HEIGHT = 5.0  WIDTH = 4.0  G-T = GTYPE_1
* 221 *   MULTIPLIER = 14.0  ..
* 222 *
* 223 *   E-W    HEIGHT = 9.0  WIDTH = 62.0  CONS = EXWALL
* 224 *   AZIMUTH = 120  ..
* 225 *
* 226 *   E-W    HEIGHT = 9.0  WIDTH = 108.0  CONS = EXWALL
* 227 *   AZIMUTH = 30  ..
* 228 *
* 229 *   I-W    HEIGHT = 9.0  WIDTH = 62.0  CONS = EXWALL
* 230 *   AZIMUTH = -60  NEXT-TO = SECTIONAB  ..
* 231 *
* 232 *   ROOF   HEIGHT = 62.0  WIDTH = 108.0  CONS = ROOFCON
* 233 *   AZIMUTH = -150  TILT = 0  ..
* 234 *
* 235 *   U-W    HEIGHT = 62.0  WIDTH = 108.0  CONS = FLOOR
* 236 *   AZIMUTH = -150  ..
* 237 *
* 238 *
* 239 * END  ..
* 240 * COMPUTE LOADS  ..
* 241 *
* 242 * INPUT SYSTEMS  ..

```

SDL PROCESSOR INPUT DATA

3/25/1995 9:30:55 SDL RUN 1

```

* 243 *
* 244 *
* 245 *          $-----$
* 246 *          $EZ - DOE SYSTEMS INPUT$
* 247 *          $-----$
* 248 *
* 249 *          $ GENERAL PROJECT DATA
* 250 *
* 251 * TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 252 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 253 * LINE-3 *      DENVER,      CO      80227      *
* 254 *
* 255 * LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX)      *
* 256 * LINE-5 *MODEL W SB, DDC, & FORCED VENTILATION * . .
* 257 * ABORT      ERRORS
* 258 * DIAGNOSTIC  WARNINGS
* 259 * SYSTEMS-REPORT VERIFICATION=(SV-A,SV-B)
* 260 * SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-E,SS-F,SS-G,
* 261 *          SS-H,SS-I,SS-J,SS-K,SS-L,SS-M,SS-N,
* 262 *          SS-O) . .
* 263 *
* 264 *          $ SCHEDULES
* 265 *
* 266 * D_FULL      =DAY-SCHEDULE (1,24) (1.) ..
* 267 * D_OFF      =DAY-SCHEDULE (1,24) (0.) ..
* 268 * HEAT_68_D  =DAY-SCHEDULE (1,24) (68.) ..
* 269 * COOL_72_D  =DAY-SCHEDULE (1,24) (78.) ..
* 270 * FAN_W_SB_D =DAY-SCHEDULE (1,5) (0.) ..
* 271 *          (6,15) (1.) ..
* 272 *          (16,24) (0.) ..
* 273 * HT68_WSB_D =DAY-SCHEDULE (1,5) (50.) ..
* 274 *          (6,15) (68.) ..
* 275 *          (16,24) (50.) ..
* 276 * CL72_WSB_D =DAY-SCHEDULE (1,5) (85.) ..
* 277 *          (6,15) (78.) ..
* 278 *          (16,24) (85.) ..
* 279 * HEAT_50_D  =DAY-SCHEDULE (1,24) (50.) ..
* 280 * COOL_85_D  =DAY-SCHEDULE (1,24) (85.) ..
* 281 * MOA.35_D   =DAY-SCHEDULE (1,6) (0.) ..
* 282 *          (7,15) (0.35) ..
* 283 *          (16,24) (0.) ..
* 284 * MOA.17_D   =DAY-SCHEDULE (1,6) (0.) ..
* 285 *          (7,15) (0.17) ..
* 286 *          (16,24) (0.) ..
* 287 *
* 288 * W_FULL      =WEEK-SCHEDULE (ALL) D_FULL ..
* 289 *
* 290 * W_OFF      =WEEK-SCHEDULE (ALL) D_OFF ..
* 291 *
* 292 * HEAT_68_W   =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 293 *
* 294 * COOL_72_W   =WEEK-SCHEDULE (ALL) COOL_72_D ..
* 295 *
* 296 * FAN_W_SB_W =WEEK-SCHEDULE (WD) FAN_W_SB_D
* 297 *          (SAT) D_OFF
* 298 *          (SUN) D_OFF
* 299 *          (HOL) FAN_W_SB_D ..
* 300 *
* 301 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 302 *          (SAT) HEAT_50_D
* 303 *          (SUN) HEAT_50_D
* 304 *          (HOL) HT68_WSB_D ..
* 305 *
* 306 * CL72_WSB_W =WEEK-SCHEDULE (WD) CL72_WSB_D
* 307 *          (SAT) COOL_85_D
* 308 *          (SUN) COOL_85_D
* 309 *          (HOL) CL72_WSB_D ..
* 310 *
* 311 * MOA.35_W    =WEEK-SCHEDULE (WD) MOA.35_D
* 312 *          (SAT) D_OFF
* 313 *          (SUN) D_OFF
* 314 *          (HOL) MOA.35_D ..
* 315 *
* 316 * MOA.17_W    =WEEK-SCHEDULE (WD) MOA.17_D
* 317 *          (SAT) D_OFF
* 318 *          (SUN) D_OFF
* 319 *          (HOL) MOA.17_D ..
* 320 *
* 321 *
* 322 * FULL_ON     =SCHEDULE THRU DEC 31 W_FULL ..
* 323 *
* 324 * FULL_OFF    =SCHEDULE THRU DEC 31 W_OFF ..
* 325 *
* 326 * HEAT_68     =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 327 *
* 328 * COOL_72     =SCHEDULE THRU DEC 31 COOL_72_W ..
* 329 *
* 330 * $ FAN WITH SET BACK
* 331 * FAN_W_SB     =SCHEDULE THRU DEC 31 FAN_W_SB_W ..
* 332 *
* 333 * HT68_WSB     =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 334 *
* 335 * CL78_WSB     =SCHEDULE THRU DEC 31 CL72_WSB_W ..
* 336 *
* 337 * $ FORCED VENTILATION
* 338 * MOA.35_FV    =SCHEDULE THRU DEC 31 MOA.35_W ..
* 339 *
* 340 * $ FORCED VENTILATION
* 341 * MOA.17_FV    =SCHEDULE THRU DEC 31 MOA.17_W ..
* 342 *

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* 343 *
* 344 *
* 345 *
* 346 *
* 347 * SECTIONAB =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0
* 348 * HEAT-TEMP-SCH = HT68_WSB COOL-TEMP-SCH = CL78_WSB
* 349 * ZONE-TYPE = CONDITIONED
* 350 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 351 * BASEBOARD-CTRL = THERMOSTATIC
* 352 * BASEBOARD-RATING = -261500. ASSIGNED-CFM = 17135.
* 353 * OUTSIDE-AIR-CFM = 3925. SIZING-OPTION = FROM-LOADS
* 354 * RATED-CFM = 17135.0 ..
* 355 *
* 356 * SECTIONC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 72.0
* 357 * HEAT-TEMP-SCH = HT68_WSB COOL-TEMP-SCH = CL78_WSB
* 358 * ZONE-TYPE = CONDITIONED
* 359 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 360 * BASEBOARD-CTRL = THERMOSTATIC
* 361 * BASEBOARD-RATING = -83000. ASSIGNED-CFM = 6950.
* 362 * OUTSIDE-AIR-CFM = 1200. SIZING-OPTION = FROM-LOADS
* 363 * RATED-CFM = 6950.0 ..
* 364 *
* 365 *
* 366 * $ SYSTEM DESCRIPTION
* 367 *
* 368 * SYSTEMAB =SYSTEM SYSTEM-TYPE = SZRH
* 369 * MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
* 370 * PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0
* 371 * ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0
* 372 * OA-CONTROL = FIXED SUPPLY-CFM = 17135.
* 373 * RETURN-CFM = 13210. RATED-CFM = 17135.
* 374 * MIN-OUTSIDE-AIR = 0.35 MIN-AIR-SCH = MOA_.35_FV
* 375 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 376 * SUPPLY-KW = 0.00118
* 377 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 378 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 379 * MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 500000.
* 380 * HEATING-CAPACITY = -818500. FURNACE-AUX = 0.
* 381 * PREHEAT-SOURCE = HOT-WATER
* 382 * ZONE-NAMES = (SECTIONAB) ..
* 383 *
* 384 * ADDITIONC =SYSTEM SYSTEM-TYPE = SZRH
* 385 * MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
* 386 * PREHEAT-T = 55.0 MIN-HUMIDITY = 30.0
* 387 * ECONO-LIMIT-T = 65.0 ECONO-LOW-LIMIT = 55.0
* 388 * OA-CONTROL = FIXED SUPPLY-CFM = 6950.
* 389 * RETURN-CFM = 5750. RATED-CFM = 6950.
* 390 * MIN-OUTSIDE-AIR = 0.17 MIN-AIR-SCH = MOA_.17_FV
* 391 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 392 * SUPPLY-KW = 0.00081
* 393 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 394 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 395 * RETURN-STATIC = 1.25 RETURN-EFF = 0.88
* 396 * NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
* 397 * COOLING-CAPACITY = 204000.
* 398 * HEATING-CAPACITY = -235452. FURNACE-AUX = 0.
* 399 * PREHEAT-SOURCE = HOT-WATER
* 400 * HUMIDIFIER-TYPE = ELECTRIC
* 401 * ZONE-NAMES = (SECTIONC) ..
* 402 *
* 403 * END ..
* 404 * COMPUTE SYSTEMS ..
* 405 *
* 406 * INPUT PLANT ..

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PDL PROCESSOR INPUT DATA

3/25/1995 9:30:55 PDL RUN 1

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$-----$
$EZ - DOE PLANTS INPUT $
$-----$

$ GENERAL PROJECT DATA

TITLE LINE-1 * EMC ENGINEERS INC. *
LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
LINE-3 * DENVER, CO 80227 *
LINE-4 *BUILDING 36, MEDICAL CENTER (WILCOX) *
LINE-5 *MODEL W SB, DDC, & FORCED VENTILATION * ..

ABORT ERRORS ..
DIAGNOSTIC WARNINGS ...
PLANT-REPORT VERIFICATION=(PV-A)
SUMMARY=(PS-A,PS-B,PS-D,PS-H,PS-I,BEPS) ..

$ SCHEDULES

DAY_ON =DAY-SCHEDULE (1,7) (0.)
(8,18) (1.)
(19,24) (0.) ..

FULL_ON =WEEK-SCHEDULE (ALL) DAY_ON ..

$ heating plant schedule
heating =SCHEDULE THRU DEC 31 FULL_ON ..

$ EQUIPMENT DESCRIPTION

HW_BOILER =PLANT-EQUIPMENT TYPE = HW-BOILER
SIZE = 1. INSTALLED-NUMBER = 2
MAX-NUMBER-AVAIL = 2 ..

CHILLERS =PLANT-EQUIPMENT TYPE = OPEN-REC-CHLR
SIZE = 0.3 INSTALLED-NUMBER = 2
MAX-NUMBER-AVAIL = 2 ..

ADDITION =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR
SIZE = 0.2 ..

PLANT-PARAMETERS
BOILER-CONTROL = STANDBY MAKEUP-WTR-T = 50.
STM-BOILER-HIR = 0.76 HW-BOILER-HIR = 1.27
CHILLER-CONTROL = STANDBY OPEN-REC-COND-TYPE = AIR
HERM-REC-COND-TYPE = AIR COMP-TO-TWR-WTR = 2.77
CCIRC-HEAD = 100.0 HCIRC-HEAD = 70.0 ..

PART-LOAD-RATIO TYPE = HW-BOILER
MIN-RATIO = 0.2500 MAX-RATIO = 1.0000
OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..

ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
ENERGY-RESOURCE RESOURCE = FUEL-OIL ..

ENERGY-STORAGE HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51
HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6
HEAT-STORE-SCH = heating ..

END ..
COMPUTE PLANT ..
STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	53.08	1,627.48
SPACE COOL	76.54	0.00
HVAC AUX	401.32	0.00
DOM HOT WTR	8.10	163.06
AUX SOLAR	0.00	0.00
LIGHTS	319.52	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	148.24	0.00
	-----	-----
TOTAL	1,006.79	1,790.55

TOTAL SITE ENERGY 2797.62 MBTU 105.8 KBTU/SQFT-YR GROSS-AREA 105.8 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 4814.29 MBTU 182.1 KBTU/SQFT-YR GROSS-AREA 182.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.9  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 1.6

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	89.663	364.806
JAN	PEAK (KBTU)	263.565	2251.282
	DY/HR	5/12	6/ 7
	TOTAL (MBTU)	79.558	272.620
FEB	PEAK (KBTU)	256.267	2097.675
	DY/HR	4/12	14/ 7
	TOTAL (MBTU)	87.925	273.046
MAR	PEAK (KBTU)	256.074	1967.243
	DY/HR	28/ 8	28/ 7
	TOTAL (MBTU)	81.569	150.741
APR	PEAK (KBTU)	236.961	1476.706
	DY/HR	4/ 7	4/ 7
	TOTAL (MBTU)	82.831	84.349
MAY	PEAK (KBTU)	234.074	1030.680
	DY/HR	20/12	2/ 7
	TOTAL (MBTU)	79.967	28.033
JUN	PEAK (KBTU)	265.278	303.689
	DY/HR	29/12	8/ 7
	TOTAL (MBTU)	86.155	27.105
JUL	PEAK (KBTU)	269.764	36.431
	DY/HR	18/12	31/ 1
	TOTAL (MBTU)	85.741	27.105
AUG	PEAK (KBTU)	266.446	36.431
	DY/HR	9/12	31/ 1
	TOTAL (MBTU)	81.223	37.277
SEP	PEAK (KBTU)	268.495	544.247
	DY/HR	2/12	23/ 7
	TOTAL (MBTU)	82.305	93.318
OCT	PEAK (KBTU)	234.074	947.856
	DY/HR	31/ 8	28/ 7
	TOTAL (MBTU)	82.959	169.727
NOV	PEAK (KBTU)	256.074	1834.113
	DY/HR	28/ 8	28/ 7
	TOTAL (MBTU)	86.929	262.668
DEC	PEAK (KBTU)	256.074	1909.914
	DY/HR	30/ 8	19/ 7
	ONE YEAR	1006.825	1790.795
	USE/PEAK	269.764	2251.282

**COMPUTER SIMULATIONS**

BUILDING 1750

**COMPUTER SIMULATIONS**  
BUILDING 1750

BASE RUN

# LDL PROCESSOR INPUT DATA

3/18/1995 12:54:14 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 *  EMC  ENGINEERS  INC.  *
* 12 *   LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 *   LINE-3 *  DENVER,  CO   80227  *
* 14 *
* 15 *   LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP      *
* 16 *   LINE-5 *BASE MODEL                          *..
* 17 *
* 18 * ABORT      ERRORS ..
* 19 * DIAGNOSTIC  WARNINGS ..
* 20 * LOADS-REPORT  SUMMARY=(LS-C,LS-D)
* 21 *           HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION HOLIDAY = NO
* 23 *           X-REF = 0.0
* 24 *           Y-REF = 0.0 ..
* 25 * RUN-PERIOD   JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 *           $ SCHEDULES
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
* 35 *           (6,7) (0.35)
* 36 *           (8,9) (0.5,0.6)
* 37 *           (10,11) (0.75)
* 38 *           (12) (0.5)
* 39 *           (13,14) (0.75)
* 40 *           (15) (0.5)
* 41 *           (16,18) (0.4)
* 42 *           (19) (0.3)
* 43 *           (20,24) (0.23) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)

```

\* 46 \* (7,19) (0.07)  
 \* 47 \* (20,24) (0.23) ..  
 \* 48 \*  
 \* 49 \* PEOPLE\_D =DAY-SCHEDULE (1,5) (0.)  
 \* 50 \* (6,7) (0.1,0.5)  
 \* 51 \* (8,11) (1.)  
 \* 52 \* (12) (0.8)  
 \* 53 \* (13,16) (1.)  
 \* 54 \* (17,18) (0.5,0.1)  
 \* 55 \* (19,24) (0.) ..  
 \* 56 \*  
 \* 57 \* EQUIP\_ON\_D =DAY-SCHEDULE (1,5) (0.05)  
 \* 58 \* (6,7) (0.1,0.2)  
 \* 59 \* (8,9) (0.3)  
 \* 60 \* (10,11) (0.4,0.7)  
 \* 61 \* (12,13) (0.4)  
 \* 62 \* (14,15) (0.8)  
 \* 63 \* (16,18) (0.7,0.3,0.1)  
 \* 64 \* (19,24) (0.05) ..  
 \* 65 \*  
 \* 66 \* SHOP\_INF\_D =DAY-SCHEDULE (1,7) (0.1)  
 \* 67 \* (8) (1.)  
 \* 68 \* (9,16) (0.1)  
 \* 69 \* (17) (1.)  
 \* 70 \* (18,24) (0.1) ..  
 \* 71 \*  
 \* 72 \*  
 \* 73 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 74 \*  
 \* 75 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 76 \*  
 \* 77 \* LIGHT\_ON\_W =WEEK-SCHEDULE (WD) LIGHT\_ON\_D  
 \* 78 \* (WEH) LT\_ON\_WKND ..  
 \* 79 \*  
 \* 80 \* PEOPLE\_W =WEEK-SCHEDULE (WD) PEOPLE\_D  
 \* 81 \* (WEH) FULL\_OFF\_D ..  
 \* 82 \*  
 \* 83 \* EQUIP\_W =WEEK-SCHEDULE (WD) EQUIP\_ON\_D  
 \* 84 \* (WEH) FULL\_OFF\_D ..  
 \* 85 \*  
 \* 86 \* SHOP\_IFL\_W =WEEK-SCHEDULE (WD) SHOP\_INF\_D  
 \* 87 \* (WEH) FULL\_OFF\_D ..  
 \* 88 \*  
 \* 89 \*  
 \* 90 \* \$ FULL ON SCHEDULE  
 \* 91 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 92 \*  
 \* 93 \* \$ FULL OFF SCHEDULE  
 \* 94 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 95 \*



\* 96 \* \$ LIGHTING SCHEDULE  
 \* 97 \* LIGHT\_SCHD =SCHEDULE THRU DEC 31 LIGHT\_ON\_W ..  
 \* 98 \*  
 \* 99 \* \$ OCCUPANCY SCHEDULE  
 \* 100 \* PEOPLE\_SCH =SCHEDULE THRU DEC 31 PEOPLE\_W ..  
 \* 101 \*  
 \* 102 \* \$ EQUIPMENT SCHEDULE  
 \* 103 \* EQUIP\_SCHD =SCHEDULE THRU DEC 31 EQUIP\_W ..  
 \* 104 \*  
 \* 105 \* \$ SHOP INFILTRATION SCHED  
 \* 106 \* SHOP\_INFIL =SCHEDULE THRU DEC 31 SHOP\_IFL\_W ..  
 \* 107 \*  
 \* 108 \*  
 \* 109 \*  
 \* 110 \*           \$ CONSTRUCTION TYPES  
 \* 111 \*  
 \* 112 \*  
 \* 113 \*  
 \* 114 \* FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..  
 \* 115 \*  
 \* 116 \* \$ ADMINISTRATION ROOF CONSTRUCTION  
 \* 117 \* ADMROOF =CONSTRUCTION LAYERS = ASHR-17 ..  
 \* 118 \*  
 \* 119 \* \$ ROOF CONSTRUCTION  
 \* 120 \* ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
 \* 121 \* SHOPWALL =LAYERS     MATERIAL=(AS01,IN23)  
 \* 122 \*           THICKNESS=(0.005,0.167) ..  
 \* 123 \* WALLCON =CONSTRUCTION LAYERS = SHOPWALL ..  
 \* 124 \* INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
 \* 125 \* DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 \* 126 \*  
 \* 127 \* G\_TYPE1 =GLASS-TYPE   SHADING-COEF = 1.000  
 \* 128 \*           PANES = 1  
 \* 129 \*           GLASS-CONDUCTANCE = 1.130 ..  
 \* 130 \*  
 \* 131 \*  
 \* 132 \*  
 \* 133 \*  
 \* 134 \*           \$ SPACE DESCRIPTION  
 \* 135 \*  
 \* 136 \* EQUIP\_SHOP =SPACE   AREA = 7280.0 VOLUME = 149240.0  
 \* 137 \*           AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 \* 138 \*           PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 139 \*           PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = INCAND  
 \* 140 \*           LIGHTING-KW = 5.23 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 141 \*           EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 18.0  
 \* 142 \*           INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.2  
 \* 143 \*           INF-SCHEDULE = SHOP\_INFIL ..  
 \* 144 \*  
 \* 145 \*   U-W   HEIGHT = 104.0 WIDTH = 70.0 CONS = FLOORCON

\* 146 \*           AZIMUTH = 90 ..  
 \* 147 \*  
 \* 148 \*       ROOF   HEIGHT = 104.0 WIDTH = 70.0 CONS = ROOFCON  
 \* 149 \*           AZIMUTH = 90 TILT = 0 ..  
 \* 150 \*  
 \* 151 \*       E-W   HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
 \* 152 \*           AZIMUTH = 180 ..  
 \* 153 \*  
 \* 154 \*       DOOR   HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 \* 155 \*           MULTIPLIER = 5.0 ..  
 \* 156 \*  
 \* 157 \*       E-W   HEIGHT = 20.5 WIDTH = 70.0 CONS = WALLCON  
 \* 158 \*           AZIMUTH = 90 ..  
 \* 159 \*  
 \* 160 \*       E-W   HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
 \* 161 \*           AZIMUTH = 0 ..  
 \* 162 \*  
 \* 163 \*       DOOR   HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 \* 164 \*           MULTIPLIER = 5.0 ..  
 \* 165 \*  
 \* 166 \*       E-W   HEIGHT = 20.5 WIDTH = 16.0 CONS = WALLCON  
 \* 167 \*           AZIMUTH = 270 ..  
 \* 168 \*  
 \* 169 \*  
 \* 170 \*   AUTOREPAIR = SPACE   AREA = 7280.0 VOLUME = 149240.0  
 \* 171 \*           AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 \* 172 \*       PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 173 \*       PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = INCAND  
 \* 174 \*       LIGHTING-KW = 5.23 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 175 \*       EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 18.0  
 \* 176 \*       INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.2  
 \* 177 \*       INF-SCHEDULE = SHOP\_INFIL ..  
 \* 178 \*  
 \* 179 \*       U-W   HEIGHT = 104.0 WIDTH = 70.0 CONS = FLOORCON  
 \* 180 \*           AZIMUTH = 90 ..  
 \* 181 \*  
 \* 182 \*       ROOF   HEIGHT = 104.0 WIDTH = 70.0 CONS = ROOFCON  
 \* 183 \*           AZIMUTH = 90 TILT = 0 ..  
 \* 184 \*  
 \* 185 \*       E-W   HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
 \* 186 \*           AZIMUTH = 180 ..  
 \* 187 \*  
 \* 188 \*       DOOR   HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 \* 189 \*           MULTIPLIER = 5.0 ..  
 \* 190 \*  
 \* 191 \*       E-W   HEIGHT = 20.5 WIDTH = 70.0 CONS = WALLCON  
 \* 192 \*           AZIMUTH = 270 ..  
 \* 193 \*  
 \* 194 \*       E-W   HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
 \* 195 \*           AZIMUTH = 0 ..

\* 196 \*  
 \* 197 \* DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 \* 198 \* MULTIPLIER = 5.0 ..  
 \* 199 \*  
 \* 200 \* E-W HEIGHT = 20.5 WIDTH = 16.0 CONS = WALLCON  
 \* 201 \* AZIMUTH = 90 ..  
 \* 202 \*  
 \* 203 \*  
 \* 204 \* SUPPLYAREA = SPACE AREA = 4080.0 VOLUME = 73440.0  
 \* 205 \* AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 \* 206 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 25.0  
 \* 207 \* PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = SUS-FLUOR  
 \* 208 \* LIGHTING-KW = 3.77 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 209 \* EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 7.0  
 \* 210 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.05  
 \* 211 \* INF-SCHEDULE = FULL\_ON ..  
 \* 212 \*  
 \* 213 \* U-W HEIGHT = 80.0 WIDTH = 51.0 CONS = FLOORCON  
 \* 214 \* AZIMUTH = 90 ..  
 \* 215 \*  
 \* 216 \* ROOF HEIGHT = 80.0 WIDTH = 51.0 CONS = ROOFCON  
 \* 217 \* AZIMUTH = 90 TILT = 0 ..  
 \* 218 \*  
 \* 219 \* E-W HEIGHT = 18.0 WIDTH = 80.0 CONS = WALLCON  
 \* 220 \* AZIMUTH = 0 ..  
 \* 221 \*  
 \* 222 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 223 \* MULTIPLIER = 2.0 ..  
 \* 224 \*  
 \* 225 \* E-W HEIGHT = 18.0 WIDTH = 32.0 CONS = WALLCON  
 \* 226 \* AZIMUTH = 180 ..  
 \* 227 \*  
 \* 228 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON ..  
 \* 229 \*  
 \* 230 \*  
 \* 231 \* ADMIN =SPACE AREA = 6440.0 VOLUME = 64400.0  
 \* 232 \* AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 \* 233 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 234 \* PEOPLE-HEAT-GAIN = 550.0  
 \* 235 \* LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 4.13  
 \* 236 \* LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 237 \* EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 16.0  
 \* 238 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.15  
 \* 239 \* INF-SCHEDULE = PEOPLE\_SCH ..  
 \* 240 \*  
 \* 241 \* U-W HEIGHT = 46.0 WIDTH = 140.0 CONS = FLOORCON  
 \* 242 \* AZIMUTH = 90 ..  
 \* 243 \*  
 \* 244 \* ROOF HEIGHT = 46.0 WIDTH = 140.0 CONS = ADMROOF  
 \* 245 \* AZIMUTH = 90 TILT = 0 ..

\* 246 \*  
 \* 247 \* E-W HEIGHT = 10.0 WIDTH = 140.0 CONS = WALLCON  
 \* 248 \* AZIMUTH = 90 ..  
 \* 249 \*  
 \* 250 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 251 \* MULTIPLIER = 4.0 ..  
 \* 252 \*  
 \* 253 \* WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = G\_TYPE1  
 \* 254 \* MULTIPLIER = 8.0 ..  
 \* 255 \*  
 \* 256 \* E-W HEIGHT = 10.0 WIDTH = 140.0 CONS = WALLCON  
 \* 257 \* AZIMUTH = 270 ..  
 \* 258 \*  
 \* 259 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 260 \* MULTIPLIER = 4.0 ..  
 \* 261 \*  
 \* 262 \* WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = G\_TYPE1  
 \* 263 \* MULTIPLIER = 8.0 ..  
 \* 264 \*  
 \* 265 \* E-W HEIGHT = 10.0 WIDTH = 10.0 CONS = WALLCON  
 \* 266 \* AZIMUTH = 180 ..  
 \* 267 \*  
 \* 268 \*  
 \* 269 \* INSPECTION = SPACE AREA = 3204.0 VOLUME = 65682.0  
 \* 270 \* AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 \* 271 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 10.0  
 \* 272 \* PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = INCAND  
 \* 273 \* LIGHTING-KW = 3.52 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 274 \* EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 10.0  
 \* 275 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.3  
 \* 276 \* INF-SCHEDULE = SHOP\_INFIL ..  
 \* 277 \*  
 \* 278 \* U-W HEIGHT = 36.0 WIDTH = 89.0 CONS = FLOORCON  
 \* 279 \* AZIMUTH = 90 ..  
 \* 280 \*  
 \* 281 \* ROOF HEIGHT = 36.0 WIDTH = 89.0 CONS = ROOFCON  
 \* 282 \* AZIMUTH = 90 TILT = 0 ..  
 \* 283 \*  
 \* 284 \* E-W HEIGHT = 20.5 WIDTH = 89.0 CONS = WALLCON  
 \* 285 \* AZIMUTH = 90 ..  
 \* 286 \*  
 \* 287 \* DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 \* 288 \* MULTIPLIER = 4.0 ..  
 \* 289 \*  
 \* 290 \* E-W HEIGHT = 20.5 WIDTH = 89.0 CONS = WALLCON  
 \* 291 \* AZIMUTH = 270 ..  
 \* 292 \*  
 \* 293 \* DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 \* 294 \* MULTIPLIER = 4.0 ..  
 \* 295 \*

\* 296 \*  
 \* 297 \* ICS\_WRHSE =SPACE AREA = 12240.0 VOLUME = 220320.0  
 \* 298 \* AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 \* 299 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 5.0  
 \* 300 \* PEOPLE-HEAT-GAIN = 600.0 LIGHTING-TYPE = INCAND  
 \* 301 \* LIGHTING-KW = 6.01 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 302 \* EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 2.0  
 \* 303 \* INF-METHOD = NONE ..  
 \* 304 \*  
 \* 305 \* U-W HEIGHT = 80.0 WIDTH = 153.0 CONS = FLOORCON  
 \* 306 \* AZIMUTH = 90 ..  
 \* 307 \*  
 \* 308 \* ROOF HEIGHT = 80.0 WIDTH = 153.0 CONS = ROOFCON  
 \* 309 \* AZIMUTH = 90 TILT = 0 ..  
 \* 310 \*  
 \* 311 \* E-W HEIGHT = 18.0 WIDTH = 153.0 CONS = WALLCON  
 \* 312 \* AZIMUTH = 90 ..  
 \* 313 \*  
 \* 314 \* E-W HEIGHT = 18.0 WIDTH = 80.0 CONS = WALLCON  
 \* 315 \* AZIMUTH = 180 ..  
 \* 316 \*  
 \* 317 \* DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON ..  
 \* 318 \*  
 \* 319 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON ..  
 \* 320 \*  
 \* 321 \* E-W HEIGHT = 18.0 WIDTH = 153.0 CONS = WALLCON  
 \* 322 \* AZIMUTH = 270 ..  
 \* 323 \*  
 \* 324 \* E-W HEIGHT = 18.0 WIDTH = 44.0 CONS = WALLCON  
 \* 325 \* AZIMUTH = 0 ..  
 \* 326 \*  
 \* 327 \*  
 \* 328 \* END ..  
 \* 329 \* COMPUTE LOADS ..  
 \* 330 \*  
 \* 331 \* INPUT SYSTEMS ..

# SDL PROCESSOR INPUT DATA

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\* 332 \*  
 \* 333 \*  
 \* 334 \* \$-----\$  
 \* 335 \* \$EZ-DOE SYSTEMS INPUT\$  
 \* 336 \* \$-----\$  
 \* 337 \*

\* 338 \*           \$ GENERAL PROJECT DATA  
 \* 339 \*  
 \* 340 \* TITLE LINE-1 \*   EMC   ENGINEERS   INC.   \*  
 \* 341 \*     LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 \* 342 \*     LINE-3 \*   DENVER,   CO   80227   \*  
 \* 343 \*  
 \* 344 \*     LINE-4 \*BUILDING 1750 MOTOR REPAIR SHOP       \*  
 \* 345 \*     LINE-5 \*BASE MODEL                       \*..  
 \* 346 \* ABORT            ERRORS ..  
 \* 347 \* DIAGNOSTIC       WARNINGS ..  
 \* 348 \* SYSTEMS-REPORT   SUMMARY=(SS-A,SS-C,SS-F,SS-O) ..  
 \* 349 \*  
 \* 350 \*           \$ SCHEDULES  
 \* 351 \*  
 \* 352 \* FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 353 \* FULL\_OFF\_D =DAY-SCHEDULE (1,24) (0.) ..  
 \* 354 \* HEAT1\_ON\_D =DAY-SCHEDULE (1,24) (55.) ..  
 \* 355 \* HEAT2\_ON\_D =DAY-SCHEDULE (1,24) (74.) ..  
 \* 356 \*  
 \* 357 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 358 \*  
 \* 359 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 360 \*  
 \* 361 \* HEAT1\_ON\_W =WEEK-SCHEDULE (ALL) HEAT1\_ON\_D ..  
 \* 362 \*  
 \* 363 \* HEAT2\_ON\_W =WEEK-SCHEDULE (ALL) HEAT2\_ON\_D ..  
 \* 364 \*  
 \* 365 \*  
 \* 366 \* \$ FULL ON SCHEDULE  
 \* 367 \* FULL\_ON   =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 368 \*  
 \* 369 \* \$ FULL OFF SCHEDULE  
 \* 370 \* FULL\_OFF   =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 371 \*  
 \* 372 \* \$ HEAT SCHEDULE, 55 DEG  
 \* 373 \* HEAT55\_ON   =SCHEDULE THRU DEC 31 HEAT1\_ON\_W ..  
 \* 374 \*  
 \* 375 \* \$ HEAT SCHEDULE 68 DEG  
 \* 376 \* HEAT68\_ON   =SCHEDULE THRU DEC 31 HEAT2\_ON\_W ..  
 \* 377 \*  
 \* 378 \*  
 \* 379 \*  
 \* 380 \*           \$ ZONE DESCRIPTION  
 \* 381 \*  
 \* 382 \* EQUIP\_SHOP =ZONE   DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
 \* 383 \*           HEAT-TEMP-SCH = HEAT55\_ON ZONE-TYPE = CONDITIONED  
 \* 384 \*           THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.  
 \* 385 \*           OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS  
 \* 386 \*           RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0  
 \* 387 \*           EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..

\* 388 \*  
 \* 389 \* AUTOREPAIR =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
 \* 390 \* HEAT-TEMP-SCH = HEAT55\_ON ZONE-TYPE = CONDITIONED  
 \* 391 \* THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.  
 \* 392 \* OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS  
 \* 393 \* RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0  
 \* 394 \* EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..  
 \* 395 \*  
 \* 396 \* SUPPLYAREA =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 397 \* HEAT-TEMP-SCH = HEAT68\_ON ZONE-TYPE = CONDITIONED  
 \* 398 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 399 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 400 \* BASEBOARD-RATING = -44320. ASSIGNED-CFM = 1230.  
 \* 401 \* OUTSIDE-AIR-CFM = 344. SIZING-OPTION = FROM-LOADS  
 \* 402 \* RATED-CFM = 1230.0 MIN-CFM-RATIO = 1.0  
 \* 403 \* EXHAUST-CFM = 344.0 HEATING-CAPACITY = -28080.0 ..  
 \* 404 \*  
 \* 405 \* ADMIN =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 406 \* HEAT-TEMP-SCH = HEAT68\_ON ZONE-TYPE = CONDITIONED  
 \* 407 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 408 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 409 \* BASEBOARD-RATING = -87340. ASSIGNED-CFM = 3290.  
 \* 410 \* OUTSIDE-AIR-CFM = 1020. SIZING-OPTION = FROM-LOADS  
 \* 411 \* RATED-CFM = 3290.0 MIN-CFM-RATIO = 1.0  
 \* 412 \* EXHAUST-CFM = 1020.0 HEATING-CAPACITY = -83400.0 ..  
 \* 413 \*  
 \* 414 \* INSPECTION =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
 \* 415 \* HEAT-TEMP-SCH = HEAT55\_ON ZONE-TYPE = CONDITIONED  
 \* 416 \* THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 4000.  
 \* 417 \* OUTSIDE-AIR-CFM = 4000. SIZING-OPTION = FROM-LOADS  
 \* 418 \* RATED-CFM = 4000.0 MIN-CFM-RATIO = 1.0  
 \* 419 \* EXHAUST-CFM = 4000.0 HEATING-CAPACITY = -269080.0 ..  
 \* 420 \*  
 \* 421 \* ICS\_WRHSE =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
 \* 422 \* HEAT-TEMP-SCH = HEAT55\_ON ZONE-TYPE = CONDITIONED  
 \* 423 \* THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 14606.  
 \* 424 \* OUTSIDE-AIR-CFM = 14606. SIZING-OPTION = FROM-LOADS  
 \* 425 \* RATED-CFM = 14606.0 MIN-CFM-RATIO = 1.0  
 \* 426 \* HEATING-CAPACITY = -613940.0 ..  
 \* 427 \*  
 \* 428 \*  
 \* 429 \* \$ SYSTEM DESCRIPTION  
 \* 430 \*  
 \* 431 \* HV3AB =SYSTEM SYSTEM-TYPE = HVSYS  
 \* 432 \* MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55\_ON  
 \* 433 \* MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 434 \* ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 435 \* SUPPLY-CFM = 9700. RATED-CFM = 9700.  
 \* 436 \* MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = HEAT55\_ON  
 \* 437 \* SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078

\* 438 \*           MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 439 \*           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 440 \*           HEATING-CAPACITY = -652520. FURNACE-AUX = 0.  
 \* 441 \*           ZONE-NAMES = (EQUIP\_SHOP) ..  
 \* 442 \*  
 \* 443 \* HV3CD   =SYSTEM   SYSTEM-TYPE = HVSYS  
 \* 444 \*           MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55\_ON  
 \* 445 \*           MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 446 \*           ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 447 \*           SUPPLY-CFM = 9700. RATED-CFM = 9700.  
 \* 448 \*           MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = HEAT55\_ON  
 \* 449 \*           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 450 \*           MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 451 \*           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 452 \*           HEATING-CAPACITY = -652520. FURNACE-AUX = 0.  
 \* 453 \*           ZONE-NAMES = (AUTOREPAIR) ..  
 \* 454 \*  
 \* 455 \* HV2    =SYSTEM   SYSTEM-TYPE = HVSYS  
 \* 456 \*           MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68\_ON  
 \* 457 \*           MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 458 \*           ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 459 \*           SUPPLY-CFM = 1230. RATED-CFM = 1230.  
 \* 460 \*           MIN-OUTSIDE-AIR = 0.28 FAN-SCHEDULE = HEAT68\_ON  
 \* 461 \*           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 462 \*           MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 463 \*           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 464 \*           HEATING-CAPACITY = -28080. FURNACE-AUX = 0.  
 \* 465 \*           RETURN-AIR-PATH = DUCT  
 \* 466 \*           ZONE-NAMES = (SUPPLYAREA) ..  
 \* 467 \*  
 \* 468 \* HV1   =SYSTEM   SYSTEM-TYPE = HVSYS  
 \* 469 \*           MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68\_ON  
 \* 470 \*           MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 471 \*           ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 472 \*           SUPPLY-CFM = 3290. RATED-CFM = 3290.  
 \* 473 \*           MIN-OUTSIDE-AIR = 0.31 FAN-SCHEDULE = HEAT68\_ON  
 \* 474 \*           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 475 \*           MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 476 \*           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 477 \*           HEATING-CAPACITY = -83400. FURNACE-AUX = 0.  
 \* 478 \*           RETURN-AIR-PATH = DUCT  
 \* 479 \*           ZONE-NAMES = (ADMIN) ..  
 \* 480 \*  
 \* 481 \* HV4   =SYSTEM   SYSTEM-TYPE = HVSYS  
 \* 482 \*           MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55\_ON  
 \* 483 \*           MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 484 \*           ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 485 \*           SUPPLY-CFM = 4000. RATED-CFM = 4000.  
 \* 486 \*           MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = HEAT55\_ON  
 \* 487 \*           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078



```

* 488 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 489 *      NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 490 *      HEATING-CAPACITY = -269080. FURNACE-AUX = 0.
* 491 *      ZONE-NAMES = (INSPECTION) ..
* 492 *
* 493 * UH_ZONE6 =SYSTEM  SYSTEM-TYPE = UHT
* 494 *      MAX-SUPPLY-T = 91.9 HEATING-SCHEDULE = HEAT55_ON
* 495 *      RATED-CFM = 14606. FAN-SCHEDULE = HEAT55_ON
* 496 *      SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00008
* 497 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 498 *      HEATING-CAPACITY = -613940. FURNACE-AUX = 0.
* 499 *      ZONE-NAMES = (ICS_WRHSE) ..
* 500 *
* 501 * END ..
* 502 * COMPUTE SYSTEMS ..
* 503 *
* 504 * INPUT PLANT ..

```

# PDL PROCESSOR INPUT DATA

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```

* 505 *
* 506 *
* 507 *      $-----$
* 508 *      $EZ-DOE PLANTS INPUT$
* 509 *      $-----$
* 510 *
* 511 *      $ GENERAL PROJECT DATA
* 512 *
* 513 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 514 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 515 * LINE-3 * DENVER, CO 80227 *
* 516 *
* 517 * LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
* 518 * LINE-5 *BASE MODEL *..
* 519 *
* 520 * ABORT ERRORS ..
* 521 * DIAGNOSTIC WARNINGS ..
* 522 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 523 * ..
* 524 *
* 525 *      $ SCHEDULES
* 526 *
* 527 *
* 528 *
* 529 *

```

\* 530 \*  
\* 531 \*       \$ EQUIPMENT DESCRIPTION  
\* 532 \*  
\* 533 \* BOILER1&2 =PLANT-EQUIPMENT   TYPE = HW-BOILER  
\* 534 \*       SIZE = 1.4   INSTALLED-NUMBER = 2  
\* 535 \*       MAX-NUMBER-AVAIL = 2 ..  
\* 536 \*  
\* 537 \* DHW       =PLANT-EQUIPMENT   TYPE = HW-BOILER  
\* 538 \*       SIZE = 0.3 ..  
\* 539 \*  
\* 540 \* PLANT-PARAMETERS   CCIRC-HEAD = 63.2 ..  
\* 541 \*  
\* 542 \*  
\* 543 \* ENERGY-RESOURCE   RESOURCE = ELECTRICITY ..  
\* 544 \* ENERGY-RESOURCE   RESOURCE = FUEL-OIL ..  
\* 545 \*  
\* 546 \* BOILERS   =LOAD-ASSIGNMENT   TYPE = HEATING  
\* 547 \*       OPERATION-MODE = RUN-NEEDED  
\* 548 \*  
\* 549 \*       LOAD-RANGE =   1.338  
\* 550 \*       PLANT-EQUIPMENT = BOILER1&2  
\* 551 \*       NUMBER =   2 ..  
\* 552 \*  
\* 553 \* DHWASSIGN =LOAD-ASSIGNMENT   TYPE = HEATING  
\* 554 \*       OPERATION-MODE = RUN-ALL  
\* 555 \*  
\* 556 \*       LOAD-RANGE =   0.315  
\* 557 \*       PLANT-EQUIPMENT = DHW  
\* 558 \*       NUMBER =   1 ..  
\* 559 \*  
\* 560 \*  
\* 561 \*  
\* 562 \* END ..  
\* 563 \* COMPUTE PLANT ..  
\* 564 \* STOP ..

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	156.60	5899.24
SPACE COOL	0.00	0.00
HVAC AUX	723.64	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	271.96	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	381.19	0.00
	-----	-----
TOTAL	1533.39	5899.24

TOTAL SITE ENERGY 7432.58 MBTU 183.4 KBTU/SQFT-YR GROSS-AREA 183.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 10503.86 MBTU 259.2 KBTU/SQFT-YR GROSS-AREA 259.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.0  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY- ELECTRICITY	FUEL-OIL
JAN	TOTAL(MBTU)	144.965
	PEAK(KBTU)	1294.618
	DY/HR	3357.942
		5/14
		26/ 7
FEB	TOTAL(MBTU)	130.085
	PEAK(KBTU)	1000.627
	DY/HR	2619.186
		14/14
		17/ 4
MAR	TOTAL(MBTU)	143.654
	PEAK(KBTU)	919.308
	DY/HR	2737.162
		3/14
		9/ 7
APR	TOTAL(MBTU)	127.344
	PEAK(KBTU)	392.443
	DY/HR	1728.876
		1/14
		3/ 5
MAY	TOTAL(MBTU)	123.384
	PEAK(KBTU)	162.484
	DY/HR	1220.346
		3/14
		17/ 5
JUN	TOTAL(MBTU)	113.542
	PEAK(KBTU)	24.218
	DY/HR	627.001
		7/14
		8/ 6
JUL	TOTAL(MBTU)	112.208
	PEAK(KBTU)	13.42
	DY/HR	310.915
		29/14
		25/ 5
AUG	TOTAL(MBTU)	117.484
	PEAK(KBTU)	21.148
	DY/HR	563.525
		30/14
		22/ 5
SEP	TOTAL(MBTU)	116.585
	PEAK(KBTU)	80.559
	DY/HR	1134.098
		14/14
		24/ 6
OCT	TOTAL(MBTU)	126.017
	PEAK(KBTU)	280.843
	DY/HR	1450.643
		27/14
		21/ 6
NOV	TOTAL(MBTU)	135.025
	PEAK(KBTU)	643.896
	DY/HR	2102.096
		25/14
		29/ 7

DEC	TOTAL(MBTU)	143.045	1065.676
	PEAK(KBTU)	387.224	2784.487
	DY/HR	28/11	31/ 4
	ONE YEAR	1533.338	5899.24
	USE/PEAK	411.57	3357.942

**COMPUTER SIMULATIONS**  
**BUILDING 1750**

**RUN 1 - SCHEDULE START/STOP AND NIGHT SETBACK**

INPUT LOADS ..

\$-----\$  
\$ E Z - D O E L O A D S I N P U T \$  
\$-----\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 \* EMC ENGINEERS INC. \*  
 LINE-2 \*BZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 LINE-3 \* DENVER, CO 80227 \*  
  
 LINE-4 \*BUILDING 1750 MOTOR REPAIR SHOP \*  
 LINE-5 \*MODEL W SETBACK \* ..

ABORT ERRORS ..  
DIAGNOSTIC WARNINGS ..  
LOADS-REPORT SUMMARY-(LS-C,LS-D)  
BUILDING-LOCATION HOURLY-DATA-SAVE = YES ..  
HOLIDAY = NO  
X-REF = 0.0  
Y-REF = 0.0 ..  
RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..

\$ SCHEDULES

FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..

FULL\_OFF\_D =DAY-SCHEDULE (1,24) (0.) ..

LIGHT\_ON\_D =DAY-SCHEDULE (1,5) (0.23)  
 (6,7) (0.35)  
 (8,9) (0.5,0.6)  
 (10,11) (0.75)  
 (12) (0.5)  
 (13,14) (0.75)  
 (15) (0.5)  
 (16,18) (0.4)  
 (19) (0.3)  
 (20,24) (0.23) ..

LT\_ON\_WKND =DAY-SCHEDULE (1,6) (0.23)  
 (7,19) (0.07)  
 (20,24) (0.23) ..

PEOPLE\_D =DAY-SCHEDULE (1,5) (0.)  
 (6,7) (0.1,0.5)  
 (8,11) (1.)  
 (12) (0.8)  
 (13,16) (1.)  
 (17,18) (0.5,0.1)  
 (19,24) (0.) ..

EQUIP\_ON\_D =DAY-SCHEDULE (1,5) (0.05)  
 (6,7) (0.1,0.2)  
 (8,9) (0.3)  
 (10,11) (0.4,0.7)  
 (12,13) (0.4)  
 (14,15) (0.8)  
 (16,18) (0.7,0.3,0.1)  
 (19,24) (0.05) ..

SHOP\_INF\_D =DAY-SCHEDULE (1,7) (0.1)  
 (8) (1.)  
 (9,16) (0.1)  
 (17) (1.)  
 (18,24) (0.1) ..

FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..

FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..

LIGHT\_ON\_W =WEEK-SCHEDULE (WD) LIGHT\_ON\_D  
 (WEH) LT\_ON\_WKND ..

PEOPLE\_W =WEEK-SCHEDULE (WD) PEOPLE\_D  
 (WEH) FULL\_OFF\_D ..

EQUIP\_W =WEEK-SCHEDULE (WD) EQUIP\_ON\_D  
 (WEH) FULL\_OFF\_D ..

SHOP\_IFL\_W =WEEK-SCHEDULE (WD) SHOP\_INF\_D  
 (WEH) FULL\_OFF\_D ..

\$ FULL ON SCHEDULE  
FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..

\$ FULL OFF SCHEDULE  
FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..

\$ LIGHTING SCHEDULE  
LIGHT\_SCHD =SCHEDULE THRU DEC 31 LIGHT\_ON\_W ..

\$ OCCUPANCY SCHEDULE  
PEOPLE\_SCH =SCHEDULE THRU DEC 31 PEOPLE\_W ..

\$ EQUIPMENT SCHEDULE  
EQUIP\_SCHD =SCHEDULE THRU DEC 31 EQUIP\_W ..

\$ SHOP INFILTRATION SCHED  
SHOP\_INFIL =SCHEDULE THRU DEC 31 SHOP\_IFL\_W ..

\$ CONSTRUCTION TYPES

FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..  
\$ ADMINISTRATION ROOF CONSTRUCTION  
ADMROOF =CONSTRUCTION LAYERS = ASHR-17 ..  
\$ ROOF CONSTRUCTION  
ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
SHOPWALL =LAYERS MATERIAL=(AS01,IN23)  
THICKNESS=(0.005,0.167) ..  
WALLCON =CONSTRUCTION LAYERS = SHOPWALL ..  
INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
G\_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000  
PANES = 1  
GLASS-CONDUCTANCE = 1.130 ..

\$ SPACE DESCRIPTION

EQUIP\_SHOP =SPACE AREA = 7280.0 VOLUME = 149240.0  
AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
PEOPLE-SCHEDULE = PEOPLE SCH NUMBER-OF-PEOPLE = 40.0  
PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = INCAND  
LIGHTING-KW = 5.23 LIGHTING-SCHEDULE = LIGHT\_SCHD  
EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 18.0  
INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.2  
INF-SCHEDULE = SHOP\_INFIL ..  
U-W HEIGHT = 104.0 WIDTH = 70.0 CONS = FLOORCON  
AZIMUTH = 90 ..  
ROOF HEIGHT = 104.0 WIDTH = 70.0 CONS = ROOFCON  
AZIMUTH = 90 TILT = 0 ..  
E-W HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
AZIMUTH = 180 ..  
DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
MULTIPLIER = 5.0 ..  
E-W HEIGHT = 20.5 WIDTH = 70.0 CONS = WALLCON  
AZIMUTH = 90 ..  
E-W HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
AZIMUTH = 0 ..  
DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
MULTIPLIER = 5.0 ..  
E-W HEIGHT = 20.5 WIDTH = 16.0 CONS = WALLCON  
AZIMUTH = 270 ..  
AUTOREPAIR =SPACE AREA = 7280.0 VOLUME = 149240.0  
AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
PEOPLE-SCHEDULE = PEOPLE SCH NUMBER-OF-PEOPLE = 40.0  
PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = INCAND  
LIGHTING-KW = 5.23 LIGHTING-SCHEDULE = LIGHT\_SCHD  
EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 18.0  
INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.2  
INF-SCHEDULE = SHOP\_INFIL ..  
U-W HEIGHT = 104.0 WIDTH = 70.0 CONS = FLOORCON  
AZIMUTH = 90 ..  
ROOF HEIGHT = 104.0 WIDTH = 70.0 CONS = ROOFCON  
AZIMUTH = 90 TILT = 0 ..  
E-W HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
AZIMUTH = 180 ..  
DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
MULTIPLIER = 5.0 ..  
E-W HEIGHT = 20.5 WIDTH = 70.0 CONS = WALLCON  
AZIMUTH = 270 ..  
E-W HEIGHT = 20.5 WIDTH = 104.0 CONS = WALLCON  
AZIMUTH = 0 ..  
DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
MULTIPLIER = 5.0 ..  
E-W HEIGHT = 20.5 WIDTH = 16.0 CONS = WALLCON  
AZIMUTH = 90 ..  
SUPPLYAREA =SPACE AREA = 4080.0 VOLUME = 73440.0  
AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
PEOPLE-SCHEDULE = PEOPLE SCH NUMBER-OF-PEOPLE = 25.0  
PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = SUS-FLUOR  
LIGHTING-KW = 3.77 LIGHTING-SCHEDULE = LIGHT\_SCHD  
EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 7.0  
INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.05  
INF-SCHEDULE = FULL\_ON ..  
U-W HEIGHT = 80.0 WIDTH = 51.0 CONS = FLOORCON  
AZIMUTH = 90 ..  
ROOF HEIGHT = 80.0 WIDTH = 51.0 CONS = ROOFCON  
AZIMUTH = 90 TILT = 0 ..



E-W HEIGHT = 18.0 WIDTH = 80.0 CONS = WALLCON  
 AZIMUTH = 0 ..

DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 2.0 ..

E-W HEIGHT = 18.0 WIDTH = 32.0 CONS = WALLCON  
 AZIMUTH = 180 ..

DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON ..

ADMIN =SPACE AREA = 6440.0 VOLUME = 64400.0  
 AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 PEOPLE-HEAT-GAIN = 550.0  
 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 4.13  
 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 16.0  
 INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.15  
 INF-SCHEDULE = PEOPLE\_SCH ..

U-W HEIGHT = 46.0 WIDTH = 140.0 CONS = FLOORCON  
 AZIMUTH = 90 ..

ROOF HEIGHT = 46.0 WIDTH = 140.0 CONS = ADMROOF  
 AZIMUTH = 90 TILT = 0 ..

E-W HEIGHT = 10.0 WIDTH = 140.0 CONS = WALLCON  
 AZIMUTH = 90 ..

DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 4.0 ..

WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = G\_TYPE1  
 MULTIPLIER = 8.0 ..

E-W HEIGHT = 10.0 WIDTH = 140.0 CONS = WALLCON  
 AZIMUTH = 270 ..

DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 4.0 ..

WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = G\_TYPE1  
 MULTIPLIER = 8.0 ..

E-W HEIGHT = 10.0 WIDTH = 10.0 CONS = WALLCON  
 AZIMUTH = 180 ..

INSPECTION =SPACE AREA = 3204.0 VOLUME = 65682.0  
 AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 10.0  
 PEOPLE-HEAT-GAIN = 700.0 LIGHTING-TYPE = INCAND  
 LIGHTING-KW = 3.52 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 10.0  
 INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.3  
 INF-SCHEDULE = SHOP\_INFIL ..

U-W HEIGHT = 36.0 WIDTH = 89.0 CONS = FLOORCON  
 AZIMUTH = 90 ..

ROOF HEIGHT = 36.0 WIDTH = 89.0 CONS = ROOFCON  
 AZIMUTH = 90 TILT = 0 ..

E-W HEIGHT = 20.5 WIDTH = 89.0 CONS = WALLCON  
 AZIMUTH = 90 ..

DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 MULTIPLIER = 4.0 ..

E-W HEIGHT = 20.5 WIDTH = 89.0 CONS = WALLCON  
 AZIMUTH = 270 ..

DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON  
 MULTIPLIER = 4.0 ..

ICS\_WRHSE =SPACE AREA = 12240.0 VOLUME = 220320.0  
 AZIMUTH = 90 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 5.0  
 PEOPLE-HEAT-GAIN = 600.0 LIGHTING-TYPE = INCAND  
 LIGHTING-KW = 6.01 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 2.0  
 INF-METHOD = NONE ..

U-W HEIGHT = 80.0 WIDTH = 153.0 CONS = FLOORCON  
 AZIMUTH = 90 ..

ROOF HEIGHT = 80.0 WIDTH = 153.0 CONS = ROOFCON  
 AZIMUTH = 90 TILT = 0 ..

E-W HEIGHT = 18.0 WIDTH = 153.0 CONS = WALLCON  
 AZIMUTH = 90 ..

E-W HEIGHT = 18.0 WIDTH = 80.0 CONS = WALLCON  
 AZIMUTH = 180 ..

DOOR HEIGHT = 14.0 WIDTH = 16.0 CONS = DOORCON ..

DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON ..

E-W HEIGHT = 18.0 WIDTH = 153.0 CONS = WALLCON  
 AZIMUTH = 270 ..

E-W HEIGHT = 18.0 WIDTH = 44.0 CONS = WALLCON  
 AZIMUTH = 0 ..

END ..  
COMPUTE LOADS ..  
INPUT SYSTEMS ..

\$-----\$  
\$EZ - DOE SYSTEMS INPUT \$  
\$-----\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 \* EMC ENGINEERS INC. \*  
LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
LINE-3 \* DENVER, CO 80227 \*  
LINE-4 \*BUILDING 1750 MOTOR REPAIR SHOP \*  
LINE-5 \*MODEL W SETBACK \* ..  
ABORT ERRORS ..  
DIAGNOSTIC WARNINGS ..  
SYSTEMS-REPORT SUMMARY=(SS-A,SS-B,SS-C) ..

\$ SCHEDULES

FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
FULL\_OFF\_D =DAY-SCHEDULE (1,24) (0.) ..  
HEAT1\_ON\_D =DAY-SCHEDULE (1,24) (55.) ..  
HEAT2\_ON\_D =DAY-SCHEDULE (1,24) (68.) ..  
FAN\_WSB\_D =DAY-SCHEDULE (1,4) (0.)  
(5,17) (1.)  
(18,24) (0.) ..  
HT68\_WSB\_D =DAY-SCHEDULE (1,4) (50.)  
(5,17) (74.)  
(18,24) (50.) ..  
HEAT50\_D =DAY-SCHEDULE (1,24) (50.) ..  
HT55\_WSB\_D =DAY-SCHEDULE (1,4) (50.)  
(5,17) (55.)  
(18,24) (50.) ..  
FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
HEAT1\_ON\_W =WEEK-SCHEDULE (ALL) HEAT1\_ON\_D ..  
HEAT2\_ON\_W =WEEK-SCHEDULE (ALL) HEAT2\_ON\_D ..  
FAN\_WSB\_W =WEEK-SCHEDULE (WD) FAN\_WSB\_D  
(SAT) FULL\_OFF\_D  
(SUN) FULL\_OFF\_D  
(HOL) FAN\_WSB\_D ..  
HT55\_WSB\_W =WEEK-SCHEDULE (WD) HT55\_WSB\_D  
(SAT) HEAT50\_D  
(SUN) HEAT50\_D  
(HOL) HT55\_WSB\_D ..  
HT68\_WSB\_W =WEEK-SCHEDULE (WD) HT68\_WSB\_D  
(SAT) HEAT50\_D  
(SUN) HEAT50\_D  
(HOL) HT68\_WSB\_D ..

\$ FULL ON SCHEDULE  
FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..

\$ FULL OFF SCHEDULE  
FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..

\$ HEAT SCHEDULE, 55 DEG  
HEAT55\_ON =SCHEDULE THRU DEC 31 HEAT1\_ON\_W ..

\$ HEAT SCHEDULE 68 DEG  
HEAT68\_ON =SCHEDULE THRU DEC 31 HEAT2\_ON\_W ..

\$ FAN SCHED WITH SET BACK  
FAN\_W\_SB =SCHEDULE THRU DEC 31 FAN\_WSB\_W ..

\$ HEAT 55F WITH 50F SET B  
HT55\_W\_SB =SCHEDULE THRU DEC 31 HT55\_WSB\_W ..

\$ HEAT 68F W 50F SET BACK  
HT68\_W\_SB =SCHEDULE THRU DEC 31 HT68\_WSB\_W ..

\$ ZONE DESCRIPTION

EQUIP\_SHOP =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
HEAT-TEMP-SCH = HT55\_W\_SB ZONE-TYPE = CONDITIONED  
THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.  
OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS  
RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0  
EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..  
AUTOREPAIR =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
HEAT-TEMP-SCH = HT55\_W\_SB ZONE-TYPE = CONDITIONED  
THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.  
OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS  
RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0  
EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..  
SUPPLYAREA =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
HEAT-TEMP-SCH = HT68\_W\_SB ZONE-TYPE = CONDITIONED  
THERMOSTAT-TYPE = PROPORTIONAL  
BASEBOARD-CTRL = THERMOSTATIC  
BASEBOARD-RATING = -44320. ASSIGNED-CFM = 1230.  
OUTSIDE-AIR-CFM = 344. SIZING-OPTION = FROM-LOADS

RATED-CFM = 1230.0 MIN-CFM-RATIO = 1.0  
 EXHAUST-CFM = 344.0 HEATING-CAPACITY = -28080.0 ..  
 ADMIN =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED  
 THERMOSTAT-TYPE = PROPORTIONAL  
 BASEBOARD-CTRL = THERMOSTATIC  
 BASEBOARD-RATING = -87340. ASSIGNED-CFM = 3290.  
 OUTSIDE-AIR-CFM = 1020. SIZING-OPTION = FROM-LOADS  
 RATED-CFM = 3290.0 MIN-CFM-RATIO = 1.0  
 EXHAUST-CFM = 1020.0 HEATING-CAPACITY = -83400.0 ..  
 INSPECTION =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
 HEAT-TEMP-SCH = HT55 W SB ZONE-TYPE = CONDITIONED  
 THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 4000.  
 OUTSIDE-AIR-CFM = 4000. SIZING-OPTION = FROM-LOADS  
 RATED-CFM = 4000.0 MIN-CFM-RATIO = 1.0  
 EXHAUST-CFM = 4000.0 HEATING-CAPACITY = -269080.0 ..  
 ICS\_WRHSE =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0  
 HEAT-TEMP-SCH = HT55 W SB ZONE-TYPE = CONDITIONED  
 THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 14606.  
 OUTSIDE-AIR-CFM = 14606. SIZING-OPTION = FROM-LOADS  
 RATED-CFM = 14606.0 MIN-CFM-RATIO = 1.0  
 HEATING-CAPACITY = -613940.0 ..

# \$ SYSTEM DESCRIPTION

HV3AB =SYSTEM SYSTEM-TYPE = HVSYS  
 MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55\_ON  
 MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 SUPPLY-CFM = 9700. RATED-CFM = 9700.  
 MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN\_W\_SB  
 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0  
 HEATING-CAPACITY = -652520. FURNACE-AUX = 0.  
 ZONE-NAMES = (EQUIP\_SHOP) ..  
 HV3CD =SYSTEM SYSTEM-TYPE = HVSYS  
 MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55\_ON  
 MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 SUPPLY-CFM = 9700. RATED-CFM = 9700.  
 MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN\_W\_SB  
 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0  
 HEATING-CAPACITY = -652520. FURNACE-AUX = 0.  
 ZONE-NAMES = (AUTOREPAIR) ..  
 HV2 =SYSTEM SYSTEM-TYPE = HVSYS  
 MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68\_ON  
 MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 SUPPLY-CFM = 1230. RATED-CFM = 1230.  
 MIN-OUTSIDE-AIR = 0.28 FAN-SCHEDULE = FAN\_W\_SB  
 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0  
 HEATING-CAPACITY = -28080. FURNACE-AUX = 0.  
 RETURN-AIR-PATH = DUCT  
 ZONE-NAMES = (SUPPLYAREA) ..  
 HV1 =SYSTEM SYSTEM-TYPE = HVSYS  
 MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68\_ON  
 MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 SUPPLY-CFM = 3290. RATED-CFM = 3290.  
 MIN-OUTSIDE-AIR = 0.31 FAN-SCHEDULE = FAN\_W\_SB  
 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0  
 HEATING-CAPACITY = -83400. FURNACE-AUX = 0.  
 RETURN-AIR-PATH = DUCT  
 ZONE-NAMES = (ADMIN) ..  
 HV4 =SYSTEM SYSTEM-TYPE = HVSYS  
 MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55\_ON  
 MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 SUPPLY-CFM = 4000. RATED-CFM = 4000.  
 MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN\_W\_SB  
 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0  
 HEATING-CAPACITY = -269080. FURNACE-AUX = 0.  
 ZONE-NAMES = (INSPECTION) ..  
 UH\_ZONE6 =SYSTEM SYSTEM-TYPE = UHT  
 MAX-SUPPLY-T = 91.9 HEATING-SCHEDULE = HEAT55\_ON  
 RATED-CFM = 14606. FAN-SCHEDULE = FAN\_W\_SB  
 SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00008  
 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  
 HEATING-CAPACITY = -613940. FURNACE-AUX = 0.  
 ZONE-NAMES = (ICS\_WRHSE) ..

END ..  
 COMPUTE SYSTEMS ..

INPUT PLANT ..

\$-----\$  
 \$ E Z - D O E P L A N T S I N P U T \$  
 \$-----\$

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$ GENERAL PROJECT DATA

TITLE LINE-1 * EMC ENGINEERS INC. *
LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
LINE-3 * DENVER, CO 80227 *

LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
LINE-5 *MODEL W SETBACK * ..

ABORT ERRORS ..
DIAGNOSTIC WARNINGS ..
PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
..

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\$ SCHEDULES

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$ EQUIPMENT DESCRIPTION

BOILER1&2 =PLANT-EQUIPMENT TYPE = HW-BOILER
          SIZE = 1.4 INSTALLED-NUMBER = 2
          MAX-NUMBER-AVAIL = 2 ..

DHW       =PLANT-EQUIPMENT TYPE = HW-BOILER
          SIZE = 0.3 ..

PLANT-PARAMETERS CCIRC-HEAD = 63.2 ..

ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
ENERGY-RESOURCE RESOURCE = FUEL-OIL ..

BOILERS    =LOAD-ASSIGNMENT TYPE = HEATING
            OPERATION-MODE = RUN-NEEDED

            LOAD-RANGE = 1.338
            PLANT-EQUIPMENT = BOILER1&2
            NUMBER = 2 ..

DHWASSIGN  =LOAD-ASSIGNMENT TYPE = HEATING
            OPERATION-MODE = RUN-ALL

            LOAD-RANGE = 0.315
            PLANT-EQUIPMENT = DHW
            NUMBER = 1 ..

END ..
COMPUTE PLANT ..
STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	94.53	3,657.21	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	354.52	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	271.97	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	381.20	0.00	0.00
	-----	-----	-----
TOTAL	1,102.21	3,657.21	0.00

TOTAL SITE ENERGY 4759.40 MBTU 117.4 KBTU/SQFT-YR GROSS-AREA 117.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 6967.08 MBTU 171.9 KBTU/SQFT-YR GROSS-AREA 171.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 18.8  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

EMC ENGINEERS INC. EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 3/27/1995 13:18:22 PDL RUN 1  
DENVER, CO 80227 BUILDING 1750 MOTOR REPAIR SHOP MODEL W SETBACK  
REPORT- PS-B MONTHLY PEAK AND TOTAL ENERGY USE WEATHER FILE- MASSENA, NY

MO	UTILITY -	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	120.729	955.836
JAN	PEAK (KBTU)	412.035	3429.182
	DY/HR	6/14	26/ 7
	TOTAL (MBTU)	104.201	674.975
FEB	PEAK (KBTU)	387.884	2715.991
	DY/HR	14/11	17/ 5
	TOTAL (MBTU)	110.853	572.435
MAR	PEAK (KBTU)	380.992	2838.768
	DY/HR	14/14	9/ 7
	TOTAL (MBTU)	84.767	175.379
APR	PEAK (KBTU)	380.737	1628.674
	DY/HR	1/14	1/ 5
	TOTAL (MBTU)	81.020	60.379
MAY	PEAK (KBTU)	380.596	1302.111
	DY/HR	3/14	17/ 5
	TOTAL (MBTU)	77.303	5.159
JUN	PEAK (KBTU)	353.880	494.732
	DY/HR	7/14	8/ 5
	TOTAL (MBTU)	73.744	0.580
JUL	PEAK (KBTU)	339.608	62.960
	DY/HR	29/14	11/ 6
	TOTAL (MBTU)	80.480	3.612
AUG	PEAK (KBTU)	351.873	225.582
	DY/HR	30/14	22/ 5
	TOTAL (MBTU)	78.597	19.043
SEP	PEAK (KBTU)	352.400	774.443
	DY/HR	14/14	23/ 6
	TOTAL (MBTU)	81.139	117.514
OCT	PEAK (KBTU)	380.706	1516.821
	DY/HR	27/14	21/ 6
	TOTAL (MBTU)	96.384	351.498
NOV	PEAK (KBTU)	380.949	2413.598
	DY/HR	28/14	29/ 7
	TOTAL (MBTU)	112.968	720.802
DEC	PEAK (KBTU)	387.766	2773.932
	DY/HR	28/11	28/ 7
	ONE YEAR	1102.185	3657.211
	USE/PEAK	412.035	3429.182

**COMPUTER SIMULATIONS**  
BUILDING 1750

RUN 3 - DDC

LDL PROCESSOR INPUT DATA

3/18/1995 12:59:18 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $EZ - DOE LOADS INPUT $
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
* 16 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D)
* 21 * HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION HOLIDAY = NO
* 23 * X-REF = 0.0
* 24 * Y-REF = 0.0 ..
* 25 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 * $ SCHEDULES
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
* 35 * (6,7) (0.35)
* 36 * (8,9) (0.5,0.6)
* 37 * (10,11) (0.75)
* 38 * (12) (0.5)
* 39 * (13,14) (0.75)
* 40 * (15) (0.5)
* 41 * (16,18) (0.4)
* 42 * (19) (0.3)
* 43 * (20,24) (0.23) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 46 * (7,19) (0.07)
* 47 * (20,24) (0.23) ..
* 48 *
* 49 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 50 * (6,7) (0.1,0.5)
* 51 * (8,11) (1.)
* 52 * (12) (0.8)
* 53 * (13,16) (1.)
* 54 * (17,18) (0.5,0.1)
* 55 * (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 58 * (6,7) (0.1,0.2)
* 59 * (8,9) (0.3)
* 60 * (10,11) (0.4,0.7)
* 61 * (12,13) (0.4)
* 62 * (14,15) (0.8)
* 63 * (16,18) (0.7,0.3,0.1)
* 64 * (19,24) (0.05) ..
* 65 *
* 66 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 67 * (8) (1.)
* 68 * (9,16) (0.1)
* 69 * (17) (1.)
* 70 * (18,24) (0.1) ..
* 71 *
* 72 *
* 73 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 * (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 * (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 * (WEH) FULL_OFF_D ..
* 85 *
* 86 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 87 * (WEH) FULL_OFF_D ..
* 88 *
* 89 *
* 90 * $ FULL ON SCHEDULE
* 91 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ SHOP INFILTRATION SCHED
* 106 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 107 *
* 108 *
* 109 *
* 110 *           $ CONSTRUCTION TYPES
* 111 *
* 112 *
* 113 *
* 114 * FLOORCON =CONSTRUCTION    U-VALUE = 0.010 ..
* 115 *
* 116 * $ ADMINISTRATION ROOF CONSTRUCTION
* 117 * ADMROOF =CONSTRUCTION    LAYERS = ASHR-17 ..
* 118 *
* 119 * $ ROOF CONSTRUCTION
* 120 * ROOFCON =CONSTRUCTION    U-VALUE = 0.050 ..
* 121 * SHOPWALL =LAYERS          MATERIAL=(AS01,IN23)
* 122 *                                THICKNESS=(0.005,0.167) ..
* 123 * WALLCON =CONSTRUCTION    LAYERS = SHOPWALL ..
* 124 * INWALL =CONSTRUCTION    U-VALUE = 0.500 ..
* 125 * DOORCON =CONSTRUCTION    U-VALUE = 0.400 ..
* 126 *
* 127 * G_TYPE1 =GLASS-TYPE      SHADING-COEF = 1.000
* 128 *                                PANES = 1
* 129 *                                GLASS-CONDUCTANCE = 1.130 ..
* 130 *
* 131 *
* 132 *
* 133 *
* 134 *           $ SPACE DESCRIPTION
* 135 *
* 136 * EQUIP_SHOP =SPACE          AREA = 7280.0  VOLUME = 149240.0
* 137 *                                AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 138 *                                PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 139 *                                PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = INCAND
* 140 *                                LIGHTING-KW = 5.23  LIGHTING-SCHEDULE = LIGHT_SCHD
* 141 *                                EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 18.0
* 142 *                                INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.2
* 143 *                                INF-SCHEDULE = SHOP_INFIL ..
* 144 *
* 145 *                                U-W      HEIGHT = 104.0  WIDTH = 70.0  CONS = FLOORCON
* 146 *                                        AZIMUTH = 90 ..
* 147 *
* 148 *                                ROOF     HEIGHT = 104.0  WIDTH = 70.0  CONS = ROOFCON
* 149 *                                        AZIMUTH = 90  TILT = 0 ..
* 150 *
* 151 *                                E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 152 *                                        AZIMUTH = 180 ..
* 153 *
* 154 *                                DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 155 *                                        MULTIPLIER = 5.0 ..
* 156 *
* 157 *                                E-W      HEIGHT = 20.5  WIDTH = 70.0  CONS = WALLCON
* 158 *                                        AZIMUTH = 90 ..
* 159 *
* 160 *                                E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 161 *                                        AZIMUTH = 0 ..
* 162 *
* 163 *                                DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 164 *                                        MULTIPLIER = 5.0 ..
* 165 *
* 166 *                                E-W      HEIGHT = 20.5  WIDTH = 16.0  CONS = WALLCON
* 167 *                                        AZIMUTH = 270 ..
* 168 *
* 169 *
* 170 * AUTOREPAIR =SPACE          AREA = 7280.0  VOLUME = 149240.0
* 171 *                                AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 172 *                                PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 173 *                                PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = INCAND
* 174 *                                LIGHTING-KW = 5.23  LIGHTING-SCHEDULE = LIGHT_SCHD
* 175 *                                EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 18.0
* 176 *                                INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.2
* 177 *                                INF-SCHEDULE = SHOP_INFIL ..
* 178 *
* 179 *                                U-W      HEIGHT = 104.0  WIDTH = 70.0  CONS = FLOORCON
* 180 *                                        AZIMUTH = 90 ..
* 181 *
* 182 *                                ROOF     HEIGHT = 104.0  WIDTH = 70.0  CONS = ROOFCON
* 183 *                                        AZIMUTH = 90  TILT = 0 ..
* 184 *
* 185 *                                E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 186 *                                        AZIMUTH = 180 ..
* 187 *
* 188 *                                DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 189 *                                        MULTIPLIER = 5.0 ..
* 190 *
* 191 *                                E-W      HEIGHT = 20.5  WIDTH = 70.0  CONS = WALLCON
* 192 *                                        AZIMUTH = 270 ..
* 193 *
* 194 *                                E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 195 *                                        AZIMUTH = 0 ..
* 196 *
* 197 *                                DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 198 *                                        MULTIPLIER = 5.0 ..
* 199 *
* 200 *                                E-W      HEIGHT = 20.5  WIDTH = 16.0  CONS = WALLCON
* 201 *                                        AZIMUTH = 90 ..
* 202 *
* 203 *
* 204 * SUPPLYAREA =SPACE          AREA = 4080.0  VOLUME = 73440.0
* 205 *                                AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 206 *                                PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 25.0
* 207 *                                PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = SUS-FLUOR
* 208 *                                LIGHTING-KW = 3.77  LIGHTING-SCHEDULE = LIGHT_SCHD
* 209 *                                EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 7.0
* 210 *                                INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.05

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* 211 *          INF-SCHEDULE = FULL_ON  ..
* 212 *
* 213 *      U-W      HEIGHT = 80.0  WIDTH = 51.0  CONS = FLOORCON
* 214 *              AZIMUTH = 90  ..
* 215 *
* 216 *      ROOF      HEIGHT = 80.0  WIDTH = 51.0  CONS = ROOFCON
* 217 *              AZIMUTH = 90  TILT = 0  ..
* 218 *
* 219 *      E-W      HEIGHT = 18.0  WIDTH = 80.0  CONS = WALLCON
* 220 *              AZIMUTH = 0  ..
* 221 *
* 222 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 223 *              MULTIPLIER = 2.0  ..
* 224 *
* 225 *      E-W      HEIGHT = 18.0  WIDTH = 32.0  CONS = WALLCON
* 226 *              AZIMUTH = 180  ..
* 227 *
* 228 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON ..
* 229 *
* 230 *
* 231 *  ADMIN      =SPACE  AREA = 6440.0  VOLUME = 64400.0
* 232 *              AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 233 *              PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 234 *              PEOPLE-HEAT-GAIN = 550.0
* 235 *              LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 4.13
* 236 *              LIGHTING-SCHEDULE = LIGHT_SCHD
* 237 *              EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 16.0
* 238 *              INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.15
* 239 *              INF-SCHEDULE = PEOPLE_SCH  ..
* 240 *
* 241 *      U-W      HEIGHT = 46.0  WIDTH = 140.0  CONS = FLOORCON
* 242 *              AZIMUTH = 90  ..
* 243 *
* 244 *      ROOF      HEIGHT = 46.0  WIDTH = 140.0  CONS = ADMROOF
* 245 *              AZIMUTH = 90  TILT = 0  ..
* 246 *
* 247 *      E-W      HEIGHT = 10.0  WIDTH = 140.0  CONS = WALLCON
* 248 *              AZIMUTH = 90  ..
* 249 *
* 250 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 251 *              MULTIPLIER = 4.0  ..
* 252 *
* 253 *      WINDOW    HEIGHT = 5.0  WIDTH = 4.0  G-T = G_TYPE1
* 254 *              MULTIPLIER = 8.0  ..
* 255 *
* 256 *      E-W      HEIGHT = 10.0  WIDTH = 140.0  CONS = WALLCON
* 257 *              AZIMUTH = 270  ..
* 258 *
* 259 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 260 *              MULTIPLIER = 4.0  ..
* 261 *
* 262 *      WINDOW    HEIGHT = 5.0  WIDTH = 4.0  G-T = G_TYPE1
* 263 *              MULTIPLIER = 8.0  ..
* 264 *
* 265 *      E-W      HEIGHT = 10.0  WIDTH = 10.0  CONS = WALLCON
* 266 *              AZIMUTH = 180  ..
* 267 *
* 268 *
* 269 *  INSPECTION =SPACE  AREA = 3204.0  VOLUME = 65682.0
* 270 *              AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 271 *              PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 10.0
* 272 *              PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = INCAND
* 273 *              LIGHTING-KW = 3.52  LIGHTING-SCHEDULE = LIGHT_SCHD
* 274 *              EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 10.0
* 275 *              INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.3
* 276 *              INF-SCHEDULE = SHOP_INFIL  ..
* 277 *
* 278 *      U-W      HEIGHT = 36.0  WIDTH = 89.0  CONS = FLOORCON
* 279 *              AZIMUTH = 90  ..
* 280 *
* 281 *      ROOF      HEIGHT = 36.0  WIDTH = 89.0  CONS = ROOFCON
* 282 *              AZIMUTH = 90  TILT = 0  ..
* 283 *
* 284 *      E-W      HEIGHT = 20.5  WIDTH = 89.0  CONS = WALLCON
* 285 *              AZIMUTH = 90  ..
* 286 *
* 287 *      DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 288 *              MULTIPLIER = 4.0  ..
* 289 *
* 290 *      E-W      HEIGHT = 20.5  WIDTH = 89.0  CONS = WALLCON
* 291 *              AZIMUTH = 270  ..
* 292 *
* 293 *      DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 294 *              MULTIPLIER = 4.0  ..
* 295 *
* 296 *
* 297 *  ICS_WRHSE  =SPACE  AREA = 12240.0  VOLUME = 220320.0
* 298 *              AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 299 *              PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 5.0
* 300 *              PEOPLE-HEAT-GAIN = 600.0  LIGHTING-TYPE = INCAND
* 301 *              LIGHTING-KW = 6.01  LIGHTING-SCHEDULE = LIGHT_SCHD
* 302 *              EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 2.0
* 303 *              INF-METHOD = NONE  ..
* 304 *
* 305 *      U-W      HEIGHT = 80.0  WIDTH = 153.0  CONS = FLOORCON
* 306 *              AZIMUTH = 90  ..
* 307 *
* 308 *      ROOF      HEIGHT = 80.0  WIDTH = 153.0  CONS = ROOFCON
* 309 *              AZIMUTH = 90  TILT = 0  ..
* 310 *
* 311 *      E-W      HEIGHT = 18.0  WIDTH = 153.0  CONS = WALLCON
* 312 *              AZIMUTH = 90  ..
* 313 *
* 314 *      E-W      HEIGHT = 18.0  WIDTH = 80.0  CONS = WALLCON
* 315 *              AZIMUTH = 180  ..
* 316 *
* 317 *      DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON ..
* 318 *

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* 319 *          DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON ..
* 320 *
* 321 *          E-W   HEIGHT = 18.0  WIDTH = 153.0  CONS = WALLCON
* 322 *          AZIMUTH = 270    ..
* 323 *
* 324 *          E-W   HEIGHT = 18.0  WIDTH = 44.0  CONS = WALLCON
* 325 *          AZIMUTH = 0      ..
* 326 *
* 327 *
* 328 * END ..
* 329 * COMPUTE LOADS ..
* 330 *
* 331 * INPUT SYSTEMS ..
```

SDL PROCESSOR INPUT DATA

3/18/1995 12:59:18 SDL RUN 1

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* 332 *
* 333 *
* 334 *           $-----$
* 335 *           $EZ - DOE SYSTEMS INPUT $
* 336 *           $-----$
* 337 *
* 338 *           $ GENERAL PROJECT DATA
* 339 *
* 340 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 341 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 342 * LINE-3 * DENVER, CO 80227 *
* 343 *
* 344 * LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
* 345 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 346 * ABORT ERRORS ..
* 347 * DIAGNOSTIC WARNINGS ..
* 348 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-O) ..
* 349 *
* 350 *           $ SCHEDULES
* 351 *
* 352 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 353 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 354 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (55.) ..
* 355 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (68.) ..
* 356 * FAN_WSB_D =DAY-SCHEDULE (1,4) (0.)
* 357 * (5,17) (1.)
* 358 * (18,24) (0.) ..
* 359 * HT68_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 360 * (5,17) (68.)
* 361 * (18,24) (50.) ..
* 362 * HEAT50_D =DAY-SCHEDULE (1,24) (50.) ..
* 363 * HT55_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 364 * (5,17) (55.)
* 365 * (18,24) (50.) ..
* 366 *
* 367 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 368 *
* 369 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 370 *
* 371 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 372 *
* 373 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 374 *
* 375 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 376 * (SAT) FULL_OFF_D
* 377 * (SUN) FULL_OFF_D
* 378 * (HOL) FAN_WSB_D ..
* 379 *
* 380 * HT55_WSB_W =WEEK-SCHEDULE (WD) HT55_WSB_D
* 381 * (SAT) HEAT50_D
* 382 * (SUN) HEAT50_D
* 383 * (HOL) HT55_WSB_D ..
* 384 *
* 385 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 386 * (SAT) HEAT50_D
* 387 * (SUN) HEAT50_D
* 388 * (HOL) HT68_WSB_D ..
* 389 *
* 390 *
* 391 * $ FULL ON SCHEDULE
* 392 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 393 *
* 394 * $ FULL OFF SCHEDULE
* 395 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 396 *
* 397 * $ HEAT SCHEDULE, 55 DEG
* 398 * HEAT55_ON =SCHEDULE THRU DEC 31 HEAT1_ON_W ..
* 399 *
* 400 * $ HEAT SCHEDULE 68 DEG
* 401 * HEAT68_ON =SCHEDULE THRU DEC 31 HEAT2_ON_W ..
* 402 *
* 403 * $ FAN SCHED WITH SET BACK
* 404 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 405 *
* 406 * $ HEAT 55F WITH 50F SET B
* 407 * HT55_W_SB =SCHEDULE THRU DEC 31 HT55_WSB_W ..
* 408 *
* 409 * $ HEAT 68F W 50F SET BACK
* 410 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 411 *
* 412 *
* 413 *
* 414 *           $ ZONE DESCRIPTION
* 415 *
* 416 * EQUIP_SHOP =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 417 * HEAT-TEMP-SCH = HT55_W_SB ZONE-TYPE = CONDITIONED
* 418 * THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.
* 419 * OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS
* 420 * RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0
* 421 * EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..
* 422 *
* 423 * AUTOREPAIR =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 424 * HEAT-TEMP-SCH = HT55_W_SB ZONE-TYPE = CONDITIONED
* 425 * THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.
* 426 * OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS
* 427 * RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0
* 428 * EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..
* 429 *
* 430 * SUPPLYAREA =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 431 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED

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* 432 *          THERMOSTAT-TYPE = PROPORTIONAL
* 433 *          BASEBOARD-CTRL = THERMOSTATIC
* 434 *          BASEBOARD-RATING = -44320. ASSIGNED-CFM = 1230.
* 435 *          OUTSIDE-AIR-CFM = 344. SIZING-OPTION = FROM-LOADS
* 436 *          RATED-CFM = 1230.0 MIN-CFM-RATIO = 1.0
* 437 *          EXHAUST-CFM = 344.0 HEATING-CAPACITY = -28080.0 ..
* 438 *
* 439 * ADMIN      =ZONE    DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 440 *          HEAT-TEMP-SCH = HT68 W_SB ZONE-TYPE = CONDITIONED
* 441 *          THERMOSTAT-TYPE = PROPORTIONAL
* 442 *          BASEBOARD-CTRL = THERMOSTATIC
* 443 *          BASEBOARD-RATING = -87340. ASSIGNED-CFM = 3290.
* 444 *          OUTSIDE-AIR-CFM = 1020. SIZING-OPTION = FROM-LOADS
* 445 *          RATED-CFM = 3290.0 MIN-CFM-RATIO = 1.0
* 446 *          EXHAUST-CFM = 1020.0 HEATING-CAPACITY = -83400.0 ..
* 447 *
* 448 * INSPECTION =ZONE    DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 449 *          HEAT-TEMP-SCH = HT55 W_SB ZONE-TYPE = CONDITIONED
* 450 *          THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 4000.
* 451 *          OUTSIDE-AIR-CFM = 4000. SIZING-OPTION = FROM-LOADS
* 452 *          RATED-CFM = 4000.0 MIN-CFM-RATIO = 1.0
* 453 *          EXHAUST-CFM = 4000.0 HEATING-CAPACITY = -269080.0 ..
* 454 *
* 455 * ICS_WRHSE  =ZONE    DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 456 *          HEAT-TEMP-SCH = HT55 W_SB ZONE-TYPE = CONDITIONED
* 457 *          THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 14606.
* 458 *          OUTSIDE-AIR-CFM = 14606. SIZING-OPTION = FROM-LOADS
* 459 *          RATED-CFM = 14606.0 MIN-CFM-RATIO = 1.0
* 460 *          HEATING-CAPACITY = -613940.0 ..
* 461 *
* 462 *
* 463 * $ SYSTEM DESCRIPTION
* 464 *
* 465 * HV3AB      =SYSTEM   SYSTEM-TYPE = HVSYS
* 466 *          MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55_ON
* 467 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 468 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 469 *          SUPPLY-CFM = 9700. RATED-CFM = 9700.
* 470 *          MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 471 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 472 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 473 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 474 *          HEATING-CAPACITY = -652520. FURNACE-AUX = 0.
* 475 *          ZONE-NAMES = (EQUIP_SHOP) ..
* 476 *
* 477 * HV3CD      =SYSTEM   SYSTEM-TYPE = HVSYS
* 478 *          MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55_ON
* 479 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 480 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 481 *          SUPPLY-CFM = 9700. RATED-CFM = 9700.
* 482 *          MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 483 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 484 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 485 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 486 *          HEATING-CAPACITY = -652520. FURNACE-AUX = 0.
* 487 *          ZONE-NAMES = (AUTOREPAIR) ..
* 488 *
* 489 * HV2        =SYSTEM   SYSTEM-TYPE = HVSYS
* 490 *          MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68_ON
* 491 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 492 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 493 *          SUPPLY-CFM = 1230. RATED-CFM = 1230.
* 494 *          MIN-OUTSIDE-AIR = 0.28 FAN-SCHEDULE = FAN_W_SB
* 495 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 496 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 497 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 498 *          HEATING-CAPACITY = -28080. FURNACE-AUX = 0.
* 499 *          RETURN-AIR-PATH = DUCT
* 500 *          ZONE-NAMES = (SUPPLYAREA) ..
* 501 *
* 502 * HV1        =SYSTEM   SYSTEM-TYPE = HVSYS
* 503 *          MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68_ON
* 504 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 505 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 506 *          SUPPLY-CFM = 3290. RATED-CFM = 3290.
* 507 *          MIN-OUTSIDE-AIR = 0.31 FAN-SCHEDULE = FAN_W_SB
* 508 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 509 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 510 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 511 *          HEATING-CAPACITY = -83400. FURNACE-AUX = 0.
* 512 *          RETURN-AIR-PATH = DUCT
* 513 *          ZONE-NAMES = (ADMIN) ..
* 514 *
* 515 * HV4        =SYSTEM   SYSTEM-TYPE = HVSYS
* 516 *          MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55_ON
* 517 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 518 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 519 *          SUPPLY-CFM = 4000. RATED-CFM = 4000.
* 520 *          MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 521 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 522 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 523 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 524 *          HEATING-CAPACITY = -269080. FURNACE-AUX = 0.
* 525 *          ZONE-NAMES = (INSPECTION) ..
* 526 *
* 527 * UH_ZONE6   =SYSTEM   SYSTEM-TYPE = UHT
* 528 *          MAX-SUPPLY-T = 91.9 HEATING-SCHEDULE = HEAT55_ON
* 529 *          RATED-CFM = 14606. FAN-SCHEDULE = FAN_W_SB
* 530 *          SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00008
* 531 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 532 *          HEATING-CAPACITY = -613940. FURNACE-AUX = 0.
* 533 *          ZONE-NAMES = (ICS_WRHSE) ..
* 534 *
* 535 * END ..
* 536 * COMPUTE SYSTEMS ..
* 537 *
* 538 * INPUT PLANT ..

```

PDL PROCESSOR INPUT DATA

3/18/1995 12:59:18 PDL RUN 1

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* 539 *
* 540 *
* 541 *
* 542 * $-----$
* 543 * $EZ - DOE PLANTS INPUT$
* 544 * $-----$
* 545 *
* 546 * $ GENERAL PROJECT DATA
* 547 *
* 548 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 549 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 550 * LINE-3 * DENVER, CO 80227 *
* 551 *
* 552 * LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
* 553 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 554 *
* 555 * ABORT ERRORS ..
* 556 * DIAGNOSTIC WARNINGS ..
* 557 * PLANT-REPORT SUMMARY=(FS-A,PS-B,BEPS)
* 558 * ..
* 559 *
* 560 * $ SCHEDULES
* 561 *
* 562 *
* 563 *
* 564 *
* 565 *
* 566 * $ EQUIPMENT DESCRIPTION
* 567 *
* 568 * BOILER1&2 =PLANT-EQUIPMENT TYPE = HW-BOILER
* 569 * SIZE = 1.4 INSTALLED-NUMBER = 2
* 570 * MAX-NUMBER-AVAIL = 2 ..
* 571 *
* 572 * DHW =PLANT-EQUIPMENT TYPE = HW-BOILER
* 573 * SIZE = 0.3 ..
* 574 *
* 575 * PLANT-PARAMETERS CCIRC-HEAD = 63.2 ..
* 576 *
* 577 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 578 * ENERGY-RESOURCE RESOURCE = FUEL-OIL ..
* 579 *
* 580 * BOILERS =LOAD-ASSIGNMENT TYPE = HEATING
* 581 * OPERATION-MODE = RUN-NEEDED
* 582 *
* 583 * LOAD-RANGE = 1.338
* 584 * PLANT-EQUIPMENT = BOILER1&2
* 585 * NUMBER = 2 ..
* 586 *
* 587 * DHWASSIGN =LOAD-ASSIGNMENT TYPE = HEATING
* 588 * OPERATION-MODE = RUN-ALL
* 589 *
* 590 * LOAD-RANGE = 0.315
* 591 * PLANT-EQUIPMENT = DHW
* 592 * NUMBER = 1 ..
* 593 *
* 594 *
* 595 *
* 596 * END ..
* 597 * COMPUTE PLANT ..
* 598 * STOP ..

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ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	92.52	3,580.20	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	351.96	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	271.97	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	381.19	0.00	0.00
	-----	-----	-----
TOTAL	1,097.64	3,580.20	0.00

TOTAL SITE ENERGY 4677.81 MBTU 115.4 KBTU/SQFT-YR GROSS-AREA 115.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 6876.34 MBTU 169.7 KBTU/SQFT-YR GROSS-AREA 169.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 8.3  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	120.725	952.820
JAN	PEAK (KBTU)	412.034	3428.815
	DY/HR	6/14	26/ 7
	TOTAL (MBTU)	104.248	669.902
FEB	PEAK (KBTU)	387.883	2713.303
	DY/HR	14/11	17/ 5
	TOTAL (MBTU)	110.782	563.598
MAR	PEAK (KBTU)	380.991	2838.634
	DY/HR	14/14	9/ 7
	TOTAL (MBTU)	84.285	164.349
APR	PEAK (KBTU)	380.736	1624.751
	DY/HR	1/14	1/ 5
	TOTAL (MBTU)	79.887	49.970
MAY	PEAK (KBTU)	377.610	1259.930
	DY/HR	3/14	17/ 5
	TOTAL (MBTU)	76.743	2.386
JUN	PEAK (KBTU)	353.614	311.086
	DY/HR	7/14	8/ 5
	TOTAL (MBTU)	73.694	0.402
JUL	PEAK (KBTU)	339.608	41.266
	DY/HR	29/14	25/ 5
	TOTAL (MBTU)	79.955	1.260
AUG	PEAK (KBTU)	339.608	188.520
	DY/HR	31/14	22/ 5
	TOTAL (MBTU)	77.584	11.537
SEP	PEAK (KBTU)	339.608	701.929
	DY/HR	30/14	23/ 6
	TOTAL (MBTU)	80.198	105.917
OCT	PEAK (KBTU)	380.705	1480.557
	DY/HR	27/14	21/ 6
	TOTAL (MBTU)	96.172	342.238
NOV	PEAK (KBTU)	380.948	2415.152
	DY/HR	28/14	29/ 7
	TOTAL (MBTU)	112.890	714.665
DEC	PEAK (KBTU)	387.765	2773.210
	DY/HR	28/11	28/ 7
	ONE YEAR	1097.161	3579.044
	USE/PEAK	412.034	3428.815



LDL PROCESSOR INPUT DATA

3/18/1995 13: 5:55 LDL RUN 1

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* 3 *
* 4 *
* 5 *
* 6 *
* 7 *
* 8 *
* 9 *
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
* 16 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D)
* 21 * HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION HOLIDAY = NO
* 23 * X-REF = 0.0
* 24 * Y-REF = 0.0 ..
* 25 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 *
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
* 35 * (6,7) (0.35)
* 36 * (8,9) (0.5,0.6)
* 37 * (10,11) (0.75)
* 38 * (12) (0.5)
* 39 * (13,14) (0.75)
* 40 * (15) (0.5)
* 41 * (16,18) (0.4)
* 42 * (19) (0.3)
* 43 * (20,24) (0.23) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 46 * (7,19) (0.07)
* 47 * (20,24) (0.23) ..
* 48 *
* 49 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 50 * (6,7) (0.1,0.5)
* 51 * (8,11) (1.)
* 52 * (12) (0.8)
* 53 * (13,16) (1.)
* 54 * (17,18) (0.5,0.1)
* 55 * (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 58 * (6,7) (0.1,0.2)
* 59 * (8,9) (0.3)
* 60 * (10,11) (0.4,0.7)
* 61 * (12,13) (0.4)
* 62 * (14,15) (0.8)
* 63 * (16,18) (0.7,0.3,0.1)
* 64 * (19,24) (0.05) ..
* 65 *
* 66 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 67 * (8) (1.)
* 68 * (9,16) (0.1)
* 69 * (17) (1.)
* 70 * (18,24) (0.1) ..
* 71 *
* 72 *
* 73 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 * (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 * (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 * (WEH) FULL_OFF_D ..
* 85 *
* 86 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 87 * (WEH) FULL_OFF_D ..
* 88 *
* 89 *
* 90 * $ FULL ON SCHEDULE
* 91 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ SHOP INFILTRATION SCHED
* 106 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 107 *
* 108 *
* 109 *
* 110 *           $ CONSTRUCTION TYPES
* 111 *
* 112 *
* 113 *
* 114 * FLOORCON =CONSTRUCTION    U-VALUE = 0.010 ..
* 115 *
* 116 * $ ADMINISTRATION ROOF CONSTRUCTION
* 117 * ADMROOF =CONSTRUCTION    LAYERS = ASHR-17 ..
* 118 *
* 119 * $ ROOF CONSTRUCTION
* 120 * ROOFCON =CONSTRUCTION    U-VALUE = 0.050 ..
* 121 * SHOPWALL =LAYERS          MATERIAL=(AS01,IN23)
* 122 *                                THICKNESS=(0.005,0.167) ..
* 123 * WALLCON =CONSTRUCTION    LAYERS = SHOPWALL ..
* 124 * INWALL =CONSTRUCTION    U-VALUE = 0.500 ..
* 125 * DOORCON =CONSTRUCTION    U-VALUE = 0.400 ..
* 126 *
* 127 * G_TYPE1 =GLASS-TYPE      SHADING-COEF = 1.000
* 128 *                                PANES = 1
* 129 *                                GLASS-CONDUCTANCE = 1.130 ..
* 130 *
* 131 *
* 132 *
* 133 *
* 134 *           $ SPACE DESCRIPTION
* 135 *
* 136 * EQUIP_SHOP =SPACE          AREA = 7280.0  VOLUME = 149240.0
* 137 *                                AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 138 *                                PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 139 *                                PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = INCAND
* 140 *                                LIGHTING-KW = 5.23  LIGHTING-SCHEDULE = LIGHT_SCHD
* 141 *                                EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 18.0
* 142 *                                INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.2
* 143 *                                INF-SCHEDULE = SHOP_INFIL ..
* 144 *
* 145 *           U-W      HEIGHT = 104.0  WIDTH = 70.0  CONS = FLOORCON
* 146 *                                AZIMUTH = 90  ..
* 147 *
* 148 *           ROOF      HEIGHT = 104.0  WIDTH = 70.0  CONS = ROOFCON
* 149 *                                AZIMUTH = 90  TILT = 0  ..
* 150 *
* 151 *           E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 152 *                                AZIMUTH = 180  ..
* 153 *
* 154 *           DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 155 *                                MULTIPLIER = 5.0  ..
* 156 *
* 157 *           E-W      HEIGHT = 20.5  WIDTH = 70.0  CONS = WALLCON
* 158 *                                AZIMUTH = 90  ..
* 159 *
* 160 *           E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 161 *                                AZIMUTH = 0  ..
* 162 *
* 163 *           DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 164 *                                MULTIPLIER = 5.0  ..
* 165 *
* 166 *           E-W      HEIGHT = 20.5  WIDTH = 16.0  CONS = WALLCON
* 167 *                                AZIMUTH = 270  ..
* 168 *
* 169 *
* 170 * AUTOREPAIR =SPACE          AREA = 7280.0  VOLUME = 149240.0
* 171 *                                AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 172 *                                PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 173 *                                PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = INCAND
* 174 *                                LIGHTING-KW = 5.23  LIGHTING-SCHEDULE = LIGHT_SCHD
* 175 *                                EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 18.0
* 176 *                                INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.2
* 177 *                                INF-SCHEDULE = SHOP_INFIL ..
* 178 *
* 179 *           U-W      HEIGHT = 104.0  WIDTH = 70.0  CONS = FLOORCON
* 180 *                                AZIMUTH = 90  ..
* 181 *
* 182 *           ROOF      HEIGHT = 104.0  WIDTH = 70.0  CONS = ROOFCON
* 183 *                                AZIMUTH = 90  TILT = 0  ..
* 184 *
* 185 *           E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 186 *                                AZIMUTH = 180  ..
* 187 *
* 188 *           DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 189 *                                MULTIPLIER = 5.0  ..
* 190 *
* 191 *           E-W      HEIGHT = 20.5  WIDTH = 70.0  CONS = WALLCON
* 192 *                                AZIMUTH = 270  ..
* 193 *
* 194 *           E-W      HEIGHT = 20.5  WIDTH = 104.0  CONS = WALLCON
* 195 *                                AZIMUTH = 0  ..
* 196 *
* 197 *           DOOR      HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 198 *                                MULTIPLIER = 5.0  ..
* 199 *
* 200 *           E-W      HEIGHT = 20.5  WIDTH = 16.0  CONS = WALLCON
* 201 *                                AZIMUTH = 90  ..
* 202 *
* 203 *
* 204 * SUPPLYAREA =SPACE          AREA = 4080.0  VOLUME = 73440.0
* 205 *                                AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 206 *                                PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 25.0
* 207 *                                PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = SUS-FLUOR
* 208 *                                LIGHTING-KW = 3.77  LIGHTING-SCHEDULE = LIGHT_SCHD
* 209 *                                EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 7.0
* 210 *                                INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.05

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* 211 *          INF-SCHEDULE = FULL_ON ..
* 212 *
* 213 *      U-W      HEIGHT = 80.0  WIDTH = 51.0  CONS = FLOORCON
* 214 *              AZIMUTH = 90  ..
* 215 *
* 216 *      ROOF     HEIGHT = 80.0  WIDTH = 51.0  CONS = ROOFCON
* 217 *              AZIMUTH = 90  TILT = 0  ..
* 218 *
* 219 *      E-W      HEIGHT = 18.0  WIDTH = 80.0  CONS = WALLCON
* 220 *              AZIMUTH = 0  ..
* 221 *
* 222 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 223 *              MULTIPLIER = 2.0  ..
* 224 *
* 225 *      E-W      HEIGHT = 18.0  WIDTH = 32.0  CONS = WALLCON
* 226 *              AZIMUTH = 180  ..
* 227 *
* 228 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON ..
* 229 *
* 230 *
* 231 *  ADMIN      =SPACE  AREA = 6440.0  VOLUME = 64400.0
* 232 *              AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 233 *              PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 234 *              PEOPLE-HEAT-GAIN = 550.0
* 235 *              LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 4.13
* 236 *              LIGHTING-SCHEDULE = LIGHT_SCHD
* 237 *              EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 16.0
* 238 *              INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.15
* 239 *              INF-SCHEDULE = PEOPLE_SCH  ..
* 240 *
* 241 *      U-W      HEIGHT = 46.0  WIDTH = 140.0  CONS = FLOORCON
* 242 *              AZIMUTH = 90  ..
* 243 *
* 244 *      ROOF     HEIGHT = 46.0  WIDTH = 140.0  CONS = ADMROOF
* 245 *              AZIMUTH = 90  TILT = 0  ..
* 246 *
* 247 *      E-W      HEIGHT = 10.0  WIDTH = 140.0  CONS = WALLCON
* 248 *              AZIMUTH = 90  ..
* 249 *
* 250 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 251 *              MULTIPLIER = 4.0  ..
* 252 *
* 253 *      WINDOW   HEIGHT = 5.0  WIDTH = 4.0  G-T = G_TYPE1
* 254 *              MULTIPLIER = 8.0  ..
* 255 *
* 256 *      E-W      HEIGHT = 10.0  WIDTH = 140.0  CONS = WALLCON
* 257 *              AZIMUTH = 270  ..
* 258 *
* 259 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 260 *              MULTIPLIER = 4.0  ..
* 261 *
* 262 *      WINDOW   HEIGHT = 5.0  WIDTH = 4.0  G-T = G_TYPE1
* 263 *              MULTIPLIER = 8.0  ..
* 264 *
* 265 *      E-W      HEIGHT = 10.0  WIDTH = 10.0  CONS = WALLCON
* 266 *              AZIMUTH = 180  ..
* 267 *
* 268 *
* 269 *  INSPECTION =SPACE  AREA = 3204.0  VOLUME = 65682.0
* 270 *              AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 271 *              PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 10.0
* 272 *              PEOPLE-HEAT-GAIN = 700.0  LIGHTING-TYPE = INCAND
* 273 *              LIGHTING-KW = 3.52  LIGHTING-SCHEDULE = LIGHT_SCHD
* 274 *              EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 10.0
* 275 *              INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.3
* 276 *              INF-SCHEDULE = SHOP_INFIL  ..
* 277 *
* 278 *      U-W      HEIGHT = 36.0  WIDTH = 89.0  CONS = FLOORCON
* 279 *              AZIMUTH = 90  ..
* 280 *
* 281 *      ROOF     HEIGHT = 36.0  WIDTH = 89.0  CONS = ROOFCON
* 282 *              AZIMUTH = 90  TILT = 0  ..
* 283 *
* 284 *      E-W      HEIGHT = 20.5  WIDTH = 89.0  CONS = WALLCON
* 285 *              AZIMUTH = 90  ..
* 286 *
* 287 *      DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 288 *              MULTIPLIER = 4.0  ..
* 289 *
* 290 *      E-W      HEIGHT = 20.5  WIDTH = 89.0  CONS = WALLCON
* 291 *              AZIMUTH = 270  ..
* 292 *
* 293 *      DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON
* 294 *              MULTIPLIER = 4.0  ..
* 295 *
* 296 *
* 297 *  ICS_WRHSE   =SPACE  AREA = 12240.0  VOLUME = 220320.0
* 298 *              AZIMUTH = 90  ZONE-TYPE = CONDITIONED
* 299 *              PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 5.0
* 300 *              PEOPLE-HEAT-GAIN = 600.0  LIGHTING-TYPE = INCAND
* 301 *              LIGHTING-KW = 6.01  LIGHTING-SCHEDULE = LIGHT_SCHD
* 302 *              EQUIP-SCHEDULE = EQUIP_SCHD  EQUIPMENT-KW = 2.0
* 303 *              INF-METHOD = NONE  ..
* 304 *
* 305 *      U-W      HEIGHT = 80.0  WIDTH = 153.0  CONS = FLOORCON
* 306 *              AZIMUTH = 90  ..
* 307 *
* 308 *      ROOF     HEIGHT = 80.0  WIDTH = 153.0  CONS = ROOFCON
* 309 *              AZIMUTH = 90  TILT = 0  ..
* 310 *
* 311 *      E-W      HEIGHT = 18.0  WIDTH = 153.0  CONS = WALLCON
* 312 *              AZIMUTH = 90  ..
* 313 *
* 314 *      E-W      HEIGHT = 18.0  WIDTH = 80.0  CONS = WALLCON
* 315 *              AZIMUTH = 180  ..
* 316 *
* 317 *      DOOR     HEIGHT = 14.0  WIDTH = 16.0  CONS = DOORCON ..
* 318 *

```

```
* 319 *          DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON ..
* 320 *
* 321 *          E-W   HEIGHT = 18.0  WIDTH = 153.0  CONS = WALLCON
* 322 *          AZIMUTH = 270  ..
* 323 *
* 324 *          E-W   HEIGHT = 18.0  WIDTH = 44.0  CONS = WALLCON
* 325 *          AZIMUTH = 0  ..
* 326 *
* 327 *
* 328 * END ..
* 329 * COMPUTE LOADS ..
* 330 *
* 331 * INPUT SYSTEMS ..
```

SDL PROCESSOR INPUT DATA

3/18/1995 13: 5:55 SDL RUN 1

```

* 332 *
* 333 *
* 334 *
* 335 * $-----$
* 336 * $EZ - DOE SYSTEMS INPUT$
* 337 * $-----$
* 338 *
* 339 * $ GENERAL PROJECT DATA
* 340 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 341 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 342 * LINE-3 * DENVER, CO 80227 *
* 343 *
* 344 * LINE-4 *BUILDING 1750 MOTOR REPAIR SHOP *
* 345 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 346 * ABORT ERRORS
* 347 * DIAGNOSTIC WARNINGS ..
* 348 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-O) ..
* 349 *
* 350 * $ SCHEDULES
* 351 *
* 352 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 353 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 354 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (55.) ..
* 355 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (68.) ..
* 356 * FAN_WSB_D =DAY-SCHEDULE (1,4) (0.)
* 357 * (5,17) (1.)
* 358 * (18,24) (0.) ..
* 359 * HT68_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 360 * (5,17) (68.)
* 361 * (18,24) (50.) ..
* 362 * HEAT50_D =DAY-SCHEDULE (1,24) (50.) ..
* 363 * HT55_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 364 * (5,17) (55.)
* 365 * (18,24) (50.) ..
* 366 * MOA.28_D =DAY-SCHEDULE (1,5) (0.)
* 367 * (6,17) (0.28)
* 368 * (18,24) (0.) ..
* 369 * MOA.31_D =DAY-SCHEDULE (1,5) (0.)
* 370 * (6,17) (0.31)
* 371 * (18,24) (0.) ..
* 372 *
* 373 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 374 *
* 375 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 376 *
* 377 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 378 *
* 379 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 380 *
* 381 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 382 * (SAT) FULL_OFF_D
* 383 * (SUN) FULL_OFF_D
* 384 * (HOL) FAN_WSB_D ..
* 385 *
* 386 * HT55_WSB_W =WEEK-SCHEDULE (WD) HT55_WSB_D
* 387 * (SAT) HEAT50_D
* 388 * (SUN) HEAT50_D
* 389 * (HOL) HT55_WSB_D ..
* 390 *
* 391 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 392 * (SAT) HEAT50_D
* 393 * (SUN) HEAT50_D
* 394 * (HOL) HT68_WSB_D ..
* 395 *
* 396 * MOA.28_W =WEEK-SCHEDULE (WD) MOA.28_D
* 397 * (SAT) FULL_OFF_D
* 398 * (SUN) FULL_OFF_D
* 399 * (HOL) MOA.28_D ..
* 400 *
* 401 * MOA.31_W =WEEK-SCHEDULE (WD) MOA.31_D
* 402 * (SAT) FULL_OFF_D
* 403 * (SUN) FULL_OFF_D
* 404 * (HOL) MOA.31_D ..
* 405 *
* 406 *
* 407 * $ FULL ON SCHEDULE
* 408 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 409 *
* 410 * $ FULL OFF SCHEDULE
* 411 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 412 *
* 413 * $ HEAT SCHEDULE, 55 DEG
* 414 * HEAT55_ON =SCHEDULE THRU DEC 31 HEAT1_ON_W ..
* 415 *
* 416 * $ HEAT SCHEDULE 68 DEG
* 417 * HEAT68_ON =SCHEDULE THRU DEC 31 HEAT2_ON_W ..
* 418 *
* 419 * $ FAN SCHED WITH SET BACK
* 420 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 421 *
* 422 * $ HEAT 55F WITH 50F SET B
* 423 * HT55_W_SB =SCHEDULE THRU DEC 31 HT55_WSB_W ..
* 424 *
* 425 * $ HEAT 68F W 50F SET BACK
* 426 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 427 *
* 428 * $ FORCED VENTILATION
* 429 * MOA.28_FV =SCHEDULE THRU DEC 31 MOA.28_W ..
* 430 *
* 431 * $ FORCED VENTILATION

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* 432 * MOA.31_FV =SCHEDULE THRU DEC 31 MOA.31_W ...
* 433 *
* 434 *
* 435 *
* 436 *
* 437 *
* 438 * $ ZONE DESCRIPTION
* 439 *
* 440 * EQUIP_SHOP =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 441 * HEAT-TEMP-SCH = HT55 W SB ZONE-TYPE = CONDITIONED
* 442 * THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.
* 443 * OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS
* 444 * RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0
* 445 * EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..
* 446 *
* 447 * AUTOREPAIR =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 448 * HEAT-TEMP-SCH = HT55 W SB ZONE-TYPE = CONDITIONED
* 449 * THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 9700.
* 450 * OUTSIDE-AIR-CFM = 9700. SIZING-OPTION = FROM-LOADS
* 451 * RATED-CFM = 9700.0 MIN-CFM-RATIO = 1.0
* 452 * EXHAUST-CFM = 9700.0 HEATING-CAPACITY = -652520.0 ..
* 453 *
* 454 * SUPPLYAREA =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 455 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 456 * THERMOSTAT-TYPE = PROPORTIONAL
* 457 * BASEBOARD-CTRL = THERMOSTATIC
* 458 * BASEBOARD-RATING = -44320. ASSIGNED-CFM = 1230.
* 459 * OUTSIDE-AIR-CFM = 344. SIZING-OPTION = FROM-LOADS
* 460 * RATED-CFM = 1230.0 MIN-CFM-RATIO = 1.0
* 461 * EXHAUST-CFM = 344.0 HEATING-CAPACITY = -28080.0 ..
* 462 *
* 463 * ADMIN =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 464 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 465 * THERMOSTAT-TYPE = PROPORTIONAL
* 466 * BASEBOARD-CTRL = THERMOSTATIC
* 467 * BASEBOARD-RATING = -87340. ASSIGNED-CFM = 3290.
* 468 * OUTSIDE-AIR-CFM = 1020. SIZING-OPTION = FROM-LOADS
* 469 * RATED-CFM = 3290.0 MIN-CFM-RATIO = 1.0
* 470 * EXHAUST-CFM = 1020.0 HEATING-CAPACITY = -83400.0 ..
* 471 *
* 472 * INSPECTION =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 473 * HEAT-TEMP-SCH = HT55 W SB ZONE-TYPE = CONDITIONED
* 474 * THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 4000.
* 475 * OUTSIDE-AIR-CFM = 4000. SIZING-OPTION = FROM-LOADS
* 476 * RATED-CFM = 4000.0 MIN-CFM-RATIO = 1.0
* 477 * EXHAUST-CFM = 4000.0 HEATING-CAPACITY = -269080.0 ..
* 478 *
* 479 * ICS_WRHSE =ZONE DESIGN-HEAT-T = 55.0 DESIGN-COOL-T = 75.0
* 480 * HEAT-TEMP-SCH = HT55 W SB ZONE-TYPE = CONDITIONED
* 481 * THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 14606.
* 482 * OUTSIDE-AIR-CFM = 14606. SIZING-OPTION = FROM-LOADS
* 483 * RATED-CFM = 14606.0 MIN-CFM-RATIO = 1.0
* 484 * HEATING-CAPACITY = -613940.0 ..
* 485 *
* 486 * $ SYSTEM DESCRIPTION
* 487 *
* 488 * HV3AB =SYSTEM SYSTEM-TYPE = HVSYS
* 489 * MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55_ON
* 490 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 491 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 492 * SUPPLY-CFM = 9700. RATED-CFM = 9700.
* 493 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 494 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 495 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 496 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 497 * HEATING-CAPACITY = -652520. FURNACE-AUX = 0.
* 498 * ZONE-NAMES = (EQUIP_SHOP) ..
* 499 *
* 500 * HV3CD =SYSTEM SYSTEM-TYPE = HVSYS
* 501 * MAX-SUPPLY-T = 55.0 HEATING-SCHEDULE = HEAT55_ON
* 502 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 503 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 504 * SUPPLY-CFM = 9700. RATED-CFM = 9700.
* 505 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 506 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 507 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 508 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 509 * HEATING-CAPACITY = -652520. FURNACE-AUX = 0.
* 510 * ZONE-NAMES = (AUTOREPAIR) ..
* 511 *
* 512 * HV2 =SYSTEM SYSTEM-TYPE = HVSYS
* 513 * MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68_ON
* 514 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 515 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 516 * SUPPLY-CFM = 1230. RATED-CFM = 1230.
* 517 * MIN-OUTSIDE-AIR = 0.28 MIN-AIR-SCH = MOA.28_FV
* 518 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 519 * SUPPLY-KW = 0.00078
* 520 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 521 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 522 * HEATING-CAPACITY = -28080. FURNACE-AUX = 0.
* 523 * RETURN-AIR-PATH = DUCT
* 524 * ZONE-NAMES = (SUPPLYAREA) ..
* 525 *
* 526 * HV1 =SYSTEM SYSTEM-TYPE = HVSYS
* 527 * MAX-SUPPLY-T = 68.0 HEATING-SCHEDULE = HEAT68_ON
* 528 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 529 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 530 * SUPPLY-CFM = 3290. RATED-CFM = 3290.
* 531 * MIN-OUTSIDE-AIR = 0.31 MIN-AIR-SCH = MOA.31_FV
* 532 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 533 * SUPPLY-KW = 0.00078
* 534 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 535 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 536 * HEATING-CAPACITY = -83400. FURNACE-AUX = 0.
* 537 * RETURN-AIR-PATH = DUCT
* 538 * ZONE-NAMES = (ADMIN) ..
* 539 *
* 540 * HV4 =SYSTEM SYSTEM-TYPE = HVSYS

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* 540 *      MAX-SUPPLY-T = 55.0  HEATING-SCHEDULE = HEAT55_ON
* 541 *      MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 542 *      ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 543 *      SUPPLY-CFM = 4000.  RATED-CFM = 4000.
* 544 *      MIN-OUTSIDE-AIR = 1.0  FAN-SCHEDULE = FAN_W_SB
* 545 *      SUPPLY-DELTA-T = 2.4  SUPPLY-KW = 0.00078
* 546 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 547 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  NIGHT-VENT-DT = 0.0
* 548 *      HEATING-CAPACITY = -269080.  FURNACE-AUX = 0.
* 549 *      ZONE-NAMES = (INSPECTION)  ..
* 550 *
* 551 *      UH_ZONE6  =SYSTEM  SYSTEM-TYPE = UHT
* 552 *      MAX-SUPPLY-T = 91.9  HEATING-SCHEDULE = HEAT55_ON
* 553 *      RATED-CFM = 14606.  FAN-SCHEDULE = FAN_W_SB
* 554 *      SUPPLY-DELTA-T = 0.2  SUPPLY-KW = 0.00008
* 555 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 556 *      HEATING-CAPACITY = -613940.  FURNACE-AUX = 0.
* 557 *      ZONE-NAMES = (ICS_WRHSE)  ..
* 558 *
* 559 *      END  ..
* 560 *      COMPUTE SYSTEMS  ..
* 561 *
* 562 *      INPUT PLANT  ..

```

PDL PROCESSOR INPUT DATA

3/18/1995 13: 5:55 PDL RUN 1

```

* 563 *
* 564 *
* 565 *
* 566 *
* 567 *
* 568 *
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* 570 *
* 571 *
* 572 *
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* 619 *
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* 621 *
* 622 *

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\$-----\$  
 \$EZ - DOE PLANTS INPUT\$  
 \$-----\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 \* EMC ENGINEERS INC. \*  
 LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 LINE-3 \* DENVER, CO 80227 \*  
 LINE-4 \*BUILDING 1750 MOTOR REPAIR SHOP \*  
 LINE-5 \*MODEL WITH SET BACK AND DDC \* ..

ABORT ERRORS ..  
 DIAGNOSTIC WARNINGS ...  
 PLANT-REPORT SUMMARY= (PS-A, PS-B, BEPS)

\$ SCHEDULES

\$ EQUIPMENT DESCRIPTION

BOILER1&2 =PLANT-EQUIPMENT TYPE = HW-BOILER  
 SIZE = 1.4 INSTALLED-NUMBER = 2  
 MAX-NUMBER-AVAIL = 2 ..  
 DHW =PLANT-EQUIPMENT TYPE = HW-BOILER  
 SIZE = 0.3 ..  
 PLANT-PARAMETERS CCIRC-HEAD = 63.2 ..  
 ENERGY-RESOURCE RESOURCE = ELECTRICITY ..  
 ENERGY-RESOURCE RESOURCE = FUEL-OIL ..  
 BOILERS =LOAD-ASSIGNMENT TYPE = HEATING  
 OPERATION-MODE = RUN-NEEDED  
 LOAD-RANGE = 1.338  
 PLANT-EQUIPMENT = BOILER1&2  
 NUMBER = 2 ..  
 DHWASSIGN =LOAD-ASSIGNMENT TYPE = HEATING  
 OPERATION-MODE = RUN-ALL  
 LOAD-RANGE = 0.315  
 PLANT-EQUIPMENT = DHW  
 NUMBER = 1 ..

END ..  
 COMPUTE PLANT ..  
 STOP ..



ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	92.46	3,579.04	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	351.57	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	271.97	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	381.20	0.00	0.00
	-----	-----	-----
TOTAL	1,097.19	3,579.04	0.00

TOTAL SITE ENERGY 4676.20 MBTU 115.4 KBTU/SQFT-YR GROSS-AREA 115.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 6873.82 MBTU 169.6 KBTU/SQFT-YR GROSS-AREA 169.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 8.3  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	120.725	952.826
JAN	PEAK (KBTU)	412.034	3428.822
	DY/HR	6/14	26/ 7
	TOTAL (MBTU)	104.248	669.907
FEB	PEAK (KBTU)	387.883	2713.302
	DY/HR	14/11	17/ 5
	TOTAL (MBTU)	110.782	563.604
MAR	PEAK (KBTU)	380.991	2838.642
	DY/HR	14/14	9/ 7
	TOTAL (MBTU)	84.285	164.352
APR	PEAK (KBTU)	380.736	1624.752
	DY/HR	1/14	1/ 5
	TOTAL (MBTU)	79.910	50.011
MAY	PEAK (KBTU)	377.611	1259.579
	DY/HR	3/14	17/ 5
	TOTAL (MBTU)	76.873	2.745
JUN	PEAK (KBTU)	353.647	311.189
	DY/HR	7/14	8/ 5
	TOTAL (MBTU)	73.836	0.791
JUL	PEAK (KBTU)	339.608	41.974
	DY/HR	29/14	25/ 5
	TOTAL (MBTU)	80.061	1.546
AUG	PEAK (KBTU)	339.608	188.670
	DY/HR	31/14	22/ 5
	TOTAL (MBTU)	77.641	11.644
SEP	PEAK (KBTU)	339.608	701.150
	DY/HR	30/14	23/ 6
	TOTAL (MBTU)	80.195	105.851
OCT	PEAK (KBTU)	380.705	1480.532
	DY/HR	27/14	21/ 6
	TOTAL (MBTU)	96.172	342.242
NOV	PEAK (KBTU)	380.948	2415.190
	DY/HR	28/14	29/ 7
	TOTAL (MBTU)	112.890	714.671
DEC	PEAK (KBTU)	387.765	2773.217
	DY/HR	28/11	28/ 7
	ONE YEAR	1097.616	3580.190
	USE/PEAK	412.034	3428.822

**COMPUTER SIMULATIONS**

BUILDING 2060

**COMPUTER SIMULATIONS**  
**BUILDING 2060**

BASE RUN

# LDL PROCESSOR INPUT DATA

3/18/1995 13:7:49 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 16 * LINE-5 *BASE MODEL *..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-K)
* 21 * HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION HOLIDAY = NO
* 23 * X-REF = 0.0
* 24 * Y-REF = 0.0 ..
* 25 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 * $ SCHEDULES
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.2)
* 35 * (6,7) (0.35)
* 36 * (8,9) (0.5,0.7)
* 37 * (10,11) (0.9)
* 38 * (12) (0.8)
* 39 * (13,14) (0.9)
* 40 * (15) (0.5)
* 41 * (16,18) (0.4)
* 42 * (19) (0.3)
* 43 * (20,24) (0.2) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)

```

\* 46 \* (7,19) (0.07)  
 \* 47 \* (20,24) (0.23) ..  
 \* 48 \*  
 \* 49 \* PEOPLE\_D =DAY-SCHEDULE (1,4) (0.)  
 \* 50 \* (5,6) (0.1)  
 \* 51 \* (7) (0.5)  
 \* 52 \* (8,11) (1.)  
 \* 53 \* (12) (0.8)  
 \* 54 \* (13,16) (1.)  
 \* 55 \* (17,18) (0.5,0.1)  
 \* 56 \* (19,24) (0.) ..  
 \* 57 \*  
 \* 58 \* EQUIP\_ON\_D =DAY-SCHEDULE (1,5) (0.)  
 \* 59 \* (6,10) (0.3,0.4,0.5,0.6,0.8)  
 \* 60 \* (11,13) (0.7,0.5,0.8)  
 \* 61 \* (14,15) (0.9)  
 \* 62 \* (16,18) (0.8,0.5,0.1)  
 \* 63 \* (19,24) (0.) ..  
 \* 64 \*  
 \* 65 \* DHW\_D =DAY-SCHEDULE (1,6) (0.)  
 \* 66 \* (7,8) (0.1,0.2)  
 \* 67 \* (9,10) (0.1)  
 \* 68 \* (11,13) (0.2,0.4,0.3)  
 \* 69 \* (14,16) (0.2)  
 \* 70 \* (17) (0.1)  
 \* 71 \* (18,24) (0.) ..  
 \* 72 \*  
 \* 73 \*  
 \* 74 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 75 \*  
 \* 76 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 77 \*  
 \* 78 \* LIGHT\_ON\_W =WEEK-SCHEDULE (WD) LIGHT\_ON\_D  
 \* 79 \* (WEH) LT\_ON\_WKND ..  
 \* 80 \*  
 \* 81 \* PEOPLE\_W =WEEK-SCHEDULE (WD) PEOPLE\_D  
 \* 82 \* (WEH) FULL\_OFF\_D ..  
 \* 83 \*  
 \* 84 \* EQUIP\_W =WEEK-SCHEDULE (WD) EQUIP\_ON\_D  
 \* 85 \* (WEH) FULL\_OFF\_D ..  
 \* 86 \*  
 \* 87 \* BAY\_INFL\_W =WEEK-SCHEDULE (WD) FULL\_ON\_D  
 \* 88 \* (WEH) FULL\_OFF\_D ..  
 \* 89 \*  
 \* 90 \* DHW\_W =WEEK-SCHEDULE (WD) DHW\_D  
 \* 91 \* (WEH) FULL\_OFF\_D ..  
 \* 92 \*  
 \* 93 \*  
 \* 94 \* \$ FULL OFF SCHEDULE  
 \* 95 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..

\* 96 \*  
 \* 97 \* \$ LIGHTING SCHEDULE  
 \* 98 \* LIGHT\_SCHD =SCHEDULE THRU DEC 31 LIGHT\_ON\_W ..  
 \* 99 \*  
 \* 100 \* \$ OCCUPANCY SCHEDULE  
 \* 101 \* PEOPLE\_SCH =SCHEDULE THRU DEC 31 PEOPLE\_W ..  
 \* 102 \*  
 \* 103 \* \$ EQUIPMENT SCHEDULE  
 \* 104 \* EQUIP\_SCHD =SCHEDULE THRU DEC 31 EQUIP\_W ..  
 \* 105 \*  
 \* 106 \* \$ BAY INFILTRATION SCHED  
 \* 107 \* BAY\_INFILT =SCHEDULE THRU DEC 31 BAY\_INFL\_W ..  
 \* 108 \*  
 \* 109 \* \$ DOMESTIC HW SCHEDULE  
 \* 110 \* DHW\_SCHD =SCHEDULE THRU DEC 31 DHW\_W ..  
 \* 111 \*  
 \* 112 \* \$ FULL ON SCHEDULE  
 \* 113 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 114 \*  
 \* 115 \*  
 \* 116 \*  
 \* 117 \*           \$ CONSTRUCTION TYPES  
 \* 118 \*  
 \* 119 \*  
 \* 120 \*  
 \* 121 \* FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..  
 \* 122 \*  
 \* 123 \* \$ ADMINISTRATION ROOF CONSTRUCTION  
 \* 124 \* ADMROOF =CONSTRUCTION U-VALUE = 0.050 ..  
 \* 125 \*  
 \* 126 \* \$ ROOF CONSTRUCTION  
 \* 127 \* CEILING =LAYERS     MATERIAL=(AS01,IN76,HF-E3)  
 \* 128 \*                   THICKNESS=(0.005,0.250,0.031) ..  
 \* 129 \* ROOFCON =CONSTRUCTION LAYERS = CEILING ..  
 \* 130 \* WALLCON =CONSTRUCTION U-VALUE = 0.200 ..  
 \* 131 \* INWALL =CONSTRUCTION U-VALUE = 20.000 ..  
 \* 132 \* DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 \* 133 \*  
 \* 134 \* G\_TYPE1 =GLASS-TYPE   SHADING-COEF = 1.000  
 \* 135 \*                   PANES = 1  
 \* 136 \*                   GLASS-CONDUCTANCE = 1.130 ..  
 \* 137 \*  
 \* 138 \*  
 \* 139 \*  
 \* 140 \*  
 \* 141 \*           \$ SPACE DESCRIPTION  
 \* 142 \*  
 \* 143 \* BAY\_A   =SPACE   AREA = 18914.0 VOLUME = 699818.0  
 \* 144 \*           AZIMUTH = 315 TEMPERATURE = (57.)  
 \* 145 \*           ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH

\* 146 \*        NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0  
 \* 147 \*        LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8  
 \* 148 \*        LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 149 \*        EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 15.0  
 \* 150 \*        SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE  
 \* 151 \*        AIR-CHANGES/HR = 0.89 INF-SCHEDULE = BAY\_INFILT ..  
 \* 152 \*  
 \* 153 \*        U-W    HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON  
 \* 154 \*            AZIMUTH = 315 ..  
 \* 155 \*  
 \* 156 \*        ROOF    HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON  
 \* 157 \*            AZIMUTH = 315 TILT = 0 ..  
 \* 158 \*  
 \* 159 \*        E-W    HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON  
 \* 160 \*            AZIMUTH = 45 ..  
 \* 161 \*  
 \* 162 \*        E-W    HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON  
 \* 163 \*            AZIMUTH = 225 ..  
 \* 164 \*  
 \* 165 \*        E-W    HEIGHT = 37.0 WIDTH = 386.0 CONS = WALLCON  
 \* 166 \*            AZIMUTH = 315 ..  
 \* 167 \*  
 \* 168 \*        DOOR    HEIGHT = 14.0 WIDTH = 30.5 CONS = DOORCON  
 \* 169 \*            MULTIPLIER = 10.0 ..  
 \* 170 \*  
 \* 171 \*        I-W    HEIGHT = 37.0 WIDTH = 1000.0 CONS = INWALL  
 \* 172 \*            AZIMUTH = 135 NEXT-TO = BAY\_B ..  
 \* 173 \*  
 \* 174 \*  
 \* 175 \* BAY\_B    =SPACE    AREA = 18914.0 VOLUME = 699818.0  
 \* 176 \*            AZIMUTH = 315 TEMPERATURE = (57.)  
 \* 177 \*            ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 \* 178 \*            NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0  
 \* 179 \*            LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8  
 \* 180 \*            LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 181 \*            EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 15.0  
 \* 182 \*            SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE  
 \* 183 \*            AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..  
 \* 184 \*  
 \* 185 \*        U-W    HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON  
 \* 186 \*            AZIMUTH = 315 ..  
 \* 187 \*  
 \* 188 \*        ROOF    HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON  
 \* 189 \*            AZIMUTH = 315 TILT = 0 ..  
 \* 190 \*  
 \* 191 \*        E-W    HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON  
 \* 192 \*            AZIMUTH = 45 ..  
 \* 193 \*  
 \* 194 \*        E-W    HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON  
 \* 195 \*            AZIMUTH = 225 ..



\* 196 \*  
 \* 197 \* E-W HEIGHT = 37.0 WIDTH = 192.0 CONS = WALLCON  
 \* 198 \* AZIMUTH = 135 ..  
 \* 199 \*  
 \* 200 \*  
 \* 201 \* ADMIN\_C =SPACE AREA = 10545.0 VOLUME = 168720.0  
 \* 202 \* AZIMUTH = 315 TEMPERATURE = (68.)  
 \* 203 \* ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 \* 204 \* NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 550.0  
 \* 205 \* LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 0.76  
 \* 206 \* LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 207 \* EQUIP-SCHEDULE = EQUIP\_SCHD EQUIPMENT-KW = 7.5  
 \* 208 \* SOURCE-SCHEDULE = DHW\_SCHD SOURCE-TYPE = HOT-WATER  
 \* 209 \* SOURCE-BTU/HR = 640000.0 SOURCE-SENSIBLE = 0.02  
 \* 210 \* SOURCE-LATENT = 0.01 INF-METHOD = AIR-CHANGE  
 \* 211 \* AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..  
 \* 212 \*  
 \* 213 \* U-W HEIGHT = 56.0 WIDTH = 188.0 CONS = FLOORCON  
 \* 214 \* AZIMUTH = 315 ..  
 \* 215 \*  
 \* 216 \* ROOF HEIGHT = 56.0 WIDTH = 188.0 CONS = ADMROOF  
 \* 217 \* AZIMUTH = 315 TILT = 0 ..  
 \* 218 \*  
 \* 219 \* E-W HEIGHT = 16.0 WIDTH = 56.0 CONS = WALLCON  
 \* 220 \* AZIMUTH = 225 ..  
 \* 221 \*  
 \* 222 \* WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G\_TYPE1  
 \* 223 \* MULTIPLIER = 2.0 ..  
 \* 224 \*  
 \* 225 \* WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G\_TYPE1  
 \* 226 \* MULTIPLIER = 2.0 ..  
 \* 227 \*  
 \* 228 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 229 \* MULTIPLIER = 3.0 ..  
 \* 230 \*  
 \* 231 \* E-W HEIGHT = 16.0 WIDTH = 186.0 CONS = WALLCON  
 \* 232 \* AZIMUTH = 135 ..  
 \* 233 \*  
 \* 234 \* WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G\_TYPE1  
 \* 235 \* MULTIPLIER = 23.0 ..  
 \* 236 \*  
 \* 237 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 238 \* MULTIPLIER = 4.0 ..  
 \* 239 \*  
 \* 240 \* E-W HEIGHT = 16.0 WIDTH = 56.0 CONS = WALLCON  
 \* 241 \* AZIMUTH = 45 ..  
 \* 242 \*  
 \* 243 \* WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G\_TYPE1  
 \* 244 \* MULTIPLIER = 2.0 ..  
 \* 245 \*

```

* 246 *      DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON
* 247 *      MULTIPLIER = 5.0 ..
* 248 *
* 249 *
* 250 *
* 251 *      $ HOURLY REPORT DESCRIPTION
* 252 *
* 253 * LD1    =REPORT-BLOCK VARIABLE-TYPE = BAY_A
* 254 *      VARIABLE-LIST = (48) ..
* 255 * LD2    =REPORT-BLOCK VARIABLE-TYPE = BAY_B
* 256 *      VARIABLE-LIST = (48) ..
* 257 * LD3    =REPORT-BLOCK VARIABLE-TYPE = ADMIN_C
* 258 *      VARIABLE-LIST = (48) ..
* 259 * END ..
* 260 * COMPUTE LOADS ..
* 261 *
* 262 * INPUT SYSTEMS ..

```

#### SDL PROCESSOR INPUT DATA

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```

* 263 *
* 264 *
* 265 *      $-----$
* 266 *      $EZ-DOE SYSTEMS INPUT$
* 267 *      $-----$
* 268 *
* 269 *      $ GENERAL PROJECT DATA
* 270 *
* 271 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 272 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 273 * LINE-3 * DENVER, CO 80227 *
* 274 *
* 275 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 276 * LINE-5 *BASE MODEL *..
* 277 * ABORT ERRORS ..
* 278 * DIAGNOSTIC WARNINGS ..
* 279 * SYSTEMS-REPORT VERIFICATION=(SV-B)
* 280 * SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-F,SS-G,SS-K,
* 281 * SS-L,SS-M)
* 282 * HOURLY-DATA-SAVE = YES ..
* 283 *
* 284 *      $ SCHEDULES
* 285 *
* 286 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 287 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..

```

\* 288 \* HEAT1\_ON\_D =DAY-SCHEDULE (1,24) (55.) ..  
 \* 289 \* HEAT2\_ON\_D =DAY-SCHEDULE (1,24) (74.) ..  
 \* 290 \* COOL\_D =DAY-SCHEDULE (1,24) (75.) ..  
 \* 291 \* COOL\_80\_D =DAY-SCHEDULE (1,24) (80.) ..  
 \* 292 \* MAU\_ON\_D =DAY-SCHEDULE (1,8) (0.)  
 \* 293 \*                   (9,16) (1.)  
 \* 294 \*                   (17,24) (0.) ..  
 \* 295 \*  
 \* 296 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 297 \*  
 \* 298 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 299 \*  
 \* 300 \* HEAT1\_ON\_W =WEEK-SCHEDULE (ALL) HEAT1\_ON\_D ..  
 \* 301 \*  
 \* 302 \* HEAT2\_ON\_W =WEEK-SCHEDULE (ALL) HEAT2\_ON\_D ..  
 \* 303 \*  
 \* 304 \* COOL\_W =WEEK-SCHEDULE (ALL) COOL\_D ..  
 \* 305 \*  
 \* 306 \* COOL\_80\_W =WEEK-SCHEDULE (ALL) COOL\_80\_D ..  
 \* 307 \*  
 \* 308 \* MAU\_ON\_W =WEEK-SCHEDULE (WD) MAU\_ON\_D  
 \* 309 \*                   (WEH) FULL\_OFF\_D ..  
 \* 310 \*  
 \* 311 \*  
 \* 312 \* \$ FULL ON SCHEDULE  
 \* 313 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 314 \*  
 \* 315 \* \$ FULL OFF SCHEDULE  
 \* 316 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 317 \*  
 \* 318 \* \$ HEAT SCHEDULE, 55 DEG  
 \* 319 \* HEAT55\_ON =SCHEDULE THRU MAY 15 HEAT1\_ON\_W  
 \* 320 \*                   THRU OCT 1 FULL\_OFF\_W  
 \* 321 \*                   THRU DEC 31 HEAT1\_ON\_W ..  
 \* 322 \*  
 \* 323 \* \$ HEAT SCHEDULE 68 DEG  
 \* 324 \* HEAT68\_ON =SCHEDULE THRU MAY 15 HEAT2\_ON\_W  
 \* 325 \*                   THRU OCT 1 FULL\_OFF\_W  
 \* 326 \*                   THRU DEC 31 HEAT2\_ON\_W ..  
 \* 327 \*  
 \* 328 \* \$ COOLING SCHEDULE  
 \* 329 \* COOL\_SCHED =SCHEDULE THRU MAY 15 FULL\_OFF\_W  
 \* 330 \*                   THRU OCT 1 COOL\_W  
 \* 331 \*                   THRU DEC 31 FULL\_OFF\_W ..  
 \* 332 \*  
 \* 333 \* \$ COOL SCHED 80 DEH  
 \* 334 \* COOL\_80 =SCHEDULE THRU MAY 15 FULL\_OFF\_W  
 \* 335 \*                   THRU OCT 1 COOL\_80\_W  
 \* 336 \*                   THRU DEC 31 FULL\_OFF\_W ..  
 \* 337 \*

```

* 338 * $ MAU SCHEDULE
* 339 * MAU_ON   =SCHEDULE THRU MAY 15 MAU_ON_W
* 340 *          THRU OCT 1 FULL_OFF_W
* 341 *          THRU DEC 31 MAU_ON_W ..
* 342 *
* 343 * $ HV_1 ON SCHEDULE
* 344 * HV_1_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 345 *
* 346 *
* 347 *
* 348 *          $ ZONE DESCRIPTION
* 349 *
* 350 * BAY_A   =ZONE  DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 351 *          HEAT-TEMP-SCH = HEAT55_ON ZONE-TYPE = CONDITIONED
* 352 *          THERMOSTAT-TYPE = PROPORTIONAL
* 353 *          BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 198000.
* 354 *          SIZING-OPTION = FROM-LOADS MIN-CFM-RATIO = 1.0
* 355 *          EXHAUST-STATIC = 0.75 ..
* 356 *
* 357 * BAY_B   =ZONE  DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 358 *          HEAT-TEMP-SCH = HEAT55_ON ZONE-TYPE = CONDITIONED
* 359 *          THERMOSTAT-TYPE = PROPORTIONAL
* 360 *          BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 55920.
* 361 *          OUTSIDE-AIR-CFM = 55920. SIZING-OPTION = FROM-LOADS
* 362 *          MIN-CFM-RATIO = 1.0 EXHAUST-STATIC = 0.75 ..
* 363 *
* 364 * ADMIN_C =ZONE  DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 365 *          HEAT-TEMP-SCH = HEAT68_ON ZONE-TYPE = CONDITIONED
* 366 *          THERMOSTAT-TYPE = PROPORTIONAL
* 367 *          BASEBOARD-CTRL = THERMOSTATIC
* 368 *          BASEBOARD-RATING = -129500. ASSIGNED-CFM = 19600.
* 369 *          OUTSIDE-AIR-CFM = 2940. SIZING-OPTION = FROM-LOADS
* 370 *          EXHAUST-CFM = 2940.0 ..
* 371 *
* 372 *
* 373 *          $ SYSTEM DESCRIPTION
* 374 *
* 375 * DUH     =SYSTEM  SYSTEM-TYPE = UHT
* 376 *          MAX-SUPPLY-T = 135.0 RATED-CFM = 198000.
* 377 *          FAN-SCHEDULE = FULL_ON SUPPLY-DELTA-T = 0.2
* 378 *          SUPPLY-KW = 0.00014 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 379 *          HEATING-CAPACITY = -6739200. FURNACE-AUX = 0.
* 380 *          ZONE-NAMES = (BAY_A) ..
* 381 *
* 382 * RMAU    =SYSTEM  SYSTEM-TYPE = SZRH
* 383 *          MAX-SUPPLY-T = 135.0 MIN-SUPPLY-T = 55.0
* 384 *          HEATING-SCHEDULE = MAU_ON PREHEAT-T = 15.0
* 385 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 386 *          ECONO-LOW-LIMIT = 55.0 OA-CONTROL = FIXED
* 387 *          SUPPLY-CFM = 55920. RATED-CFM = 55920.

```

```

* 388 *      MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.37
* 389 *      FAN-SCHEDULE = MAU_ON SUPPLY-DELTA-T = 2.4
* 390 *      SUPPLY-KW = 0.00112 NIGHT-CYCLE-CTRL = STAY-OFF
* 391 *      NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
* 392 *      COOL-FEET-MIN = 0. HEATING-CAPACITY = -2536800.
* 393 *      FURNACE-AUX = 0.
* 394 *      ZONE-NAMES = (BAY_B) ..
* 395 *
* 396 * HV-1  =SYSTEM  SYSTEM-TYPE = HVSYS
* 397 *      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HV_1_ON
* 398 *      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 399 *      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 400 *      SUPPLY-CFM = 19600. RETURN-CFM = 16660.
* 401 *      RATED-CFM = 19600. MIN-OUTSIDE-AIR = 0.15
* 402 *      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00119
* 403 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 404 *      NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 405 *      HEATING-CAPACITY = -243400. FURNACE-AUX = 0.
* 406 *      ZONE-NAMES = (ADMIN_C) ..
* 407 *
* 408 *
* 409 *      $ HOURLY REPORT DESCRIPTION
* 410 *
* 411 * sys1  =REPORT-BLOCK VARIABLE-TYPE = DUH
* 412 *      VARIABLE-LIST = (5,7,9,10) ..
* 413 * SYS2  =REPORT-BLOCK VARIABLE-TYPE = RMAU
* 414 *      VARIABLE-LIST = (5,7,9,10) ..
* 415 * SYS3  =REPORT-BLOCK VARIABLE-TYPE = HV-1
* 416 *      VARIABLE-LIST = (5,7,9,10) ..
* 417 * REP2  = HOURLY-REPORT REPORT-SCHEDULE = FULL_ON
* 418 *      REPORT-BLOCK = (sys1,SYS2,SYS3)
* 419 * ..
* 420 * END ..
* 421 * COMPUTE SYSTEMS ..
* 422 *
* 423 * INPUT PLANT ..

```

# PDL PROCESSOR INPUT DATA

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```

* 424 *
* 425 *
* 426 *      $-----$
* 427 *      $EZ-DOE PLANTS INPUT$
* 428 *      $-----$
* 429 *

```

```

* 430 *          $ GENERAL PROJECT DATA
* 431 *
* 432 * TITLE LINE-1 *   EMC   ENGINEERS   INC.   *
* 433 *   LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 434 *   LINE-3 *   DENVER,   CO   80227   *
* 435 *
* 436 *   LINE-4 *BUILDING 2060, MNT. HANGAR AVUM   *
* 437 *   LINE-5 *BASE MODEL                       *..
* 438 *
* 439 * ABORT          ERRORS ..
* 440 * DIAGNOSTIC     WARNINGS ..
* 441 * PLANT-REPORT   SUMMARY=(PS-A,PS-B,BEPS)
* 442 *
* 443 *              HOURLY-DATA-SAVE = YES ..
* 444 *
* 445 *          $ SCHEDULES
* 446 *
* 447 *
* 448 *
* 449 *
* 450 *
* 451 *          $ EQUIPMENT DESCRIPTION
* 452 *
* 453 * BOILER   =PLANT-EQUIPMENT  TYPE = HW-BOILER
* 454 *          SIZE = 8.4 ..
* 455 *
* 456 * ACC8     =PLANT-EQUIPMENT  TYPE = OPEN-CENT-CHLR
* 457 *          SIZE = 0.1 ..
* 458 *
* 459 * DHW       =PLANT-EQUIPMENT  TYPE = HW-BOILER
* 460 *          SIZE = 0.6 ..
* 461 *
* 462 * PLANT-PARAMETERS  OPEN-CENT-COND-TYPE = AIR  CCIRC-HEAD = 63.2
* 463 *          HCIRC-HEAD = 100.0 ..
* 464 *
* 465 *
* 466 * ENERGY-RESOURCE  RESOURCE = ELECTRICITY ..
* 467 * ENERGY-RESOURCE  RESOURCE = FUEL-OIL ..
* 468 *
* 469 *
* 470 *
* 471 * END ..
* 472 * COMPUTE PLANT ..
* 473 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	329.58	6998.54
SPACE COOL	0.00	0.00
HVAC AUX	1236.42	0.00
DOM HOT WTR	26.19	547.04
AUX SOLAR	0.00	0.00
LIGHTS	397.03	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	259.56	0.00
	-----	-----
TOTAL	2248.76	7545.58

TOTAL SITE ENERGY 9794.29 MBTU 202.5 KBTU/SQFT-YR GROSS-AREA 202.5 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 14298.49 MBTU 295.6 KBTU/SQFT-YR GROSS-AREA 295.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY- ELECTRICITY	FUEL-OIL
JAN	TOTAL(MBTU)	269.163
	PEAK(KBTU)	1836.808
	DY/HR	781.834
		8082.728
		5/14
		5/12
FEB	TOTAL(MBTU)	231.709
	PEAK(KBTU)	1270.027
	DY/HR	770.717
		5868.426
		14/14
		4/12
MAR	TOTAL(MBTU)	248.778
	PEAK(KBTU)	1220.336
	DY/HR	768.043
		5219.054
		3/14
		9/ 9
APR	TOTAL(MBTU)	193.073
	PEAK(KBTU)	446.334
	DY/HR	711.472
		2963.707
		1/10
		1/12
MAY	TOTAL(MBTU)	156.8
	PEAK(KBTU)	154.024
	DY/HR	666.761
		2136.915
		2/14
		3/12
JUN	TOTAL(MBTU)	121.019
	PEAK(KBTU)	54.464
	DY/HR	361.867
		370.077
		7/14
		30/12
JUL	TOTAL(MBTU)	123.839
	PEAK(KBTU)	55.502
	DY/HR	361.867
		370.077
		28/14
		29/12
AUG	TOTAL(MBTU)	126.479
	PEAK(KBTU)	58.604
	DY/HR	361.867
		661.293
		19/14
		6/24
SEP	TOTAL(MBTU)	123.751
	PEAK(KBTU)	57.965
	DY/HR	336.269
		370.077
		5/11
		30/12
OCT	TOTAL(MBTU)	189.699
	PEAK(KBTU)	323.514
	DY/HR	698.226
		2819.212
		26/13
		26/12
NOV	TOTAL(MBTU)	214.036
	PEAK(KBTU)	742.149
	DY/HR	754.056
		3710.586
		22/14
		22/12



DEC	TOTAL(MBTU)	250.377	1325.843
	PEAK(KBTU)	768.775	5499.183
	DY/HR	30/14	23/12
	ONE YEAR	2248.724	7545.568
	USE/PEAK	781.834	8082.728

**COMPUTER SIMULATIONS**  
**BUILDING 2060**

**RUN 1 - SCHEDULE START/STOP AND NIGHT SETBACK**

LDL PROCESSOR INPUT DATA

4/ 5/1995 14:52: 2 LDL RUN 1

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* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $EZ - DOE LOADS INPUT $
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 16 * LINE-5 *MODEL WITH SET BACK * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 * X-REF = 0.0
* 23 * Y-REF = 0.0 ..
* 24 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 * $ SCHEDULES
* 28 *
* 29 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.2)
* 34 * (6,7) (0.35)
* 35 * (8,9) (0.5,0.7)
* 36 * (10,11) (0.9)
* 37 * (12) (0.8)
* 38 * (13,14) (0.9)
* 39 * (15) (0.5)
* 40 * (16,18) (0.4)
* 41 * (19) (0.3)
* 42 * (20,24) (0.2) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 * (7,19) (0.07)
* 46 * (20,24) (0.23) ..
* 47 *
* 48 * PEOPLE_D =DAY-SCHEDULE (1,4) (0.)
* 49 * (5,6) (0.1)
* 50 * (7) (0.5)
* 51 * (8,11) (1.)
* 52 * (12) (0.8)
* 53 * (13,16) (1.)
* 54 * (17,18) (0.5,0.1)
* 55 * (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.)
* 58 * (6,10) (0.3,0.4,0.5,0.6,0.8)
* 59 * (11,13) (0.7,0.5,0.8)
* 60 * (14,15) (0.9)
* 61 * (16,18) (0.8,0.5,0.1)
* 62 * (19,24) (0.) ..
* 63 *
* 64 * DHW_D =DAY-SCHEDULE (1,6) (0.)
* 65 * (7,8) (0.1,0.2)
* 66 * (9,10) (0.1)
* 67 * (11,13) (0.2,0.4,0.3)
* 68 * (14,16) (0.2)
* 69 * (17) (0.1)
* 70 * (18,24) (0.) ..
* 71 *
* 72 *
* 73 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 * (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 * (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 * (WEH) FULL_OFF_D ..
* 85 *
* 86 * BAY_INFL_W =WEEK-SCHEDULE (WD) FULL_ON_D
* 87 * (WEH) FULL_OFF_D ..
* 88 *
* 89 * DHW_W =WEEK-SCHEDULE (WD) DHW_D
* 90 * (WEH) FULL_OFF_D ..
* 91 *
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ BAY INFILTRATION SCHED
* 106 * BAY_INFILT =SCHEDULE THRU DEC 31 BAY_INFL_W ..
* 107 *
* 108 * $ DOMESTIC HW SCHEDULE
* 109 * DHW_SCHD =SCHEDULE THRU DEC 31 DHW_W ..
* 110 *
* 111 * $ FULL ON SCHEDULE
* 112 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 113 *
* 114 *
* 115 *
* 116 * $ CONSTRUCTION TYPES
* 117 *
* 118 *
* 119 *
* 120 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 121 *
* 122 * $ ADMINISTRATION ROOF CONSTRUCTION
* 123 * ADMROOF =CONSTRUCTION U-VALUE = 0.050 ..
* 124 *
* 125 * $ ROOF CONSTRUCTION
* 126 * CEILING =LAYERS MATERIAL=(AS01,IN76,HF-E3)
* 127 * THICKNESS=(0.005,0.250,0.031) ..
* 128 * ROOFCON =CONSTRUCTION LAYERS = CEILING ..
* 129 * WALLCON =CONSTRUCTION U-VALUE = 0.200 ..
* 130 * INWALL =CONSTRUCTION U-VALUE = 20.000 ..
* 131 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 132 *
* 133 * G_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000
* 134 * PANES = 1
* 135 * GLASS-CONDUCTANCE = 1.130 ..
* 136 *
* 137 *
* 138 *
* 139 *
* 140 * $ SPACE DESCRIPTION
* 141 *
* 142 * BAY_A =SPACE AREA = 18914.0 VOLUME = 699818.0
* 143 * AZIMUTH = 315 TEMPERATURE = (57.)
* 144 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 145 * NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0
* 146 * LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8
* 147 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 148 * EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 15.0
* 149 * SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE
* 150 * AIR-CHANGES/HR = 0.89 INF-SCHEDULE = BAY_INFILT ..
* 151 *
* 152 * U-W HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON
* 153 * AZIMUTH = 315 ..
* 154 *
* 155 * ROOF HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON
* 156 * AZIMUTH = 315 TILT = 0 ..
* 157 *
* 158 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 159 * AZIMUTH = 45 ..
* 160 *
* 161 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 162 * AZIMUTH = 225 ..
* 163 *
* 164 * E-W HEIGHT = 37.0 WIDTH = 386.0 CONS = WALLCON
* 165 * AZIMUTH = 315 ..
* 166 *
* 167 * DOOR HEIGHT = 14.0 WIDTH = 30.5 CONS = DOORCON
* 168 * MULTIPLIER = 10.0 ..
* 169 *
* 170 * I-W HEIGHT = 37.0 WIDTH = 1000.0 CONS = INWALL
* 171 * AZIMUTH = 135 NEXT-TO = BAY_B ..
* 172 *
* 173 *
* 174 * BAY_B =SPACE AREA = 18914.0 VOLUME = 699818.0
* 175 * AZIMUTH = 315 TEMPERATURE = (57.)
* 176 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 177 * NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0
* 178 * LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8
* 179 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 180 * EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 15.0
* 181 * SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE
* 182 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 183 *
* 184 * U-W HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON
* 185 * AZIMUTH = 315 ..
* 186 *
* 187 * ROOF HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON
* 188 * AZIMUTH = 315 TILT = 0 ..
* 189 *
* 190 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 191 * AZIMUTH = 45 ..
* 192 *
* 193 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 194 * AZIMUTH = 225 ..
* 195 *
* 196 * E-W HEIGHT = 37.0 WIDTH = 192.0 CONS = WALLCON
* 197 * AZIMUTH = 135 ..
* 198 *
* 199 *
* 200 * ADMIN_C =SPACE AREA = 10545.0 VOLUME = 168720.0
* 201 * AZIMUTH = 315 TEMPERATURE = (68.)
* 202 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 203 * NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 550.0
* 204 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 0.76
* 205 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 206 * EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 7.5
* 207 * SOURCE-SCHEDULE = DHW_SCHD SOURCE-TYPE = HOT-WATER
* 208 * SOURCE-BTU/HR = 640000.0 SOURCE-SENSIBLE = 0.02
* 209 * SOURCE-LATENT = 0.01 INF-METHOD = AIR-CHANGE
* 210 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..

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* 211 *
* 212 *      U-W      HEIGHT = 56.0  WIDTH = 188.0  CONS = FLOORCON
* 213 *              AZIMUTH = 315  ..
* 214 *
* 215 *      ROOF      HEIGHT = 56.0  WIDTH = 188.0  CONS = ADMROOF
* 216 *              AZIMUTH = 315  TILT = 0  ..
* 217 *
* 218 *      E-W      HEIGHT = 16.0  WIDTH = 56.0  CONS = WALLCON
* 219 *              AZIMUTH = 225  ..
* 220 *
* 221 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 222 *              MULTIPLIER = 2.0  ..
* 223 *
* 224 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 225 *              MULTIPLIER = 2.0  ..
* 226 *
* 227 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 228 *              MULTIPLIER = 3.0  ..
* 229 *
* 230 *      E-W      HEIGHT = 16.0  WIDTH = 186.0  CONS = WALLCON
* 231 *              AZIMUTH = 135  ..
* 232 *
* 233 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 234 *              MULTIPLIER = 23.0  ..
* 235 *
* 236 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 237 *              MULTIPLIER = 4.0  ..
* 238 *
* 239 *      E-W      HEIGHT = 16.0  WIDTH = 56.0  CONS = WALLCON
* 240 *              AZIMUTH = 45  ..
* 241 *
* 242 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 243 *              MULTIPLIER = 2.0  ..
* 244 *
* 245 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 246 *              MULTIPLIER = 5.0  ..
* 247 *
* 248 *
* 249 *      END  ..
* 250 *      COMPUTE LOADS  ..
* 251 *
* 252 *      INPUT SYSTEMS  ..

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SDL PROCESSOR INPUT DATA

4/ 5/1995 14:52: 2 SDL RUN 1

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* 253 *
* 254 *
* 255 *
* 256 *          $-----$
* 257 *          $EZ - DOE SYSTEMS INPUT $
* 258 *          $-----$
* 259 *
* 260 *          $ GENERAL PROJECT DATA
* 261 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 262 * LINE-2 *EZDOR - ELITE SOFTWARE DEVELOPMENT INC*
* 263 * LINE-3 * DENVER, CO 80227 *
* 264 *
* 265 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 266 * LINE-5 *MODEL WITH SET BACK * ..
* 267 * ABORT ERRORS
* 268 * DIAGNOSTIC WARNINGS
* 269 * SYSTEMS-REPORT VERIFICATION=(SV-B)
* 270 * SUMMARY=(SS-A,SS-B,SS-C,SS-K,SS-L,SS-M)
* 271 * HOURLY-DATA-SAVE = YES ..
* 272 *
* 273 *          $ SCHEDULES
* 274 *
* 275 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 276 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 277 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (55.) ..
* 278 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (74.) ..
* 279 * COOL_D =DAY-SCHEDULE (1,24) (75.) ..
* 280 * COOL_80_D =DAY-SCHEDULE (1,24) (80.) ..
* 281 * MAU_ON_D =DAY-SCHEDULE (1,8) (0.)
* 282 * (9,16) (1.)
* 283 * (17,24) (0.) ..
* 284 * FAN_WSBA_D =DAY-SCHEDULE (1,4) (0.)
* 285 * (5,21) (1.)
* 286 * (22,24) (0.) ..
* 287 * FAN_WSB_B_D =DAY-SCHEDULE (1,4) (0.)
* 288 * (5,17) (1.)
* 289 * (18,24) (0.) ..
* 290 * FAN_WSBC_D =DAY-SCHEDULE (1,2) (1.)
* 291 * (3,4) (0.)
* 292 * (5,24) (1.) ..
* 293 * HT55WSBA_D =DAY-SCHEDULE (1,4) (50.)
* 294 * (5,21) (55.)
* 295 * (22,24) (50.) ..
* 296 * HT55WSB_B_D =DAY-SCHEDULE (1,4) (50.)
* 297 * (5,17) (55.)
* 298 * (18,24) (50.) ..
* 299 * HT55WSBC_D =DAY-SCHEDULE (1,2) (55.)
* 300 * (3,4) (50.)
* 301 * (5,24) (55.) ..
* 302 * HT68_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 303 * (5,17) (74.)
* 304 * (18,24) (50.) ..
* 305 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 306 *
* 307 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 308 *
* 309 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 310 *
* 311 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 312 *
* 313 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 314 *
* 315 * COOL_W =WEEK-SCHEDULE (ALL) COOL_D ..
* 316 *
* 317 * COOL_80_W =WEEK-SCHEDULE (ALL) COOL_80_D ..
* 318 *
* 319 * MAU_ON_W =WEEK-SCHEDULE (WD) MAU_ON_D
* 320 * (WEH) FULL_OFF_D ..
* 321 *
* 322 * FAN_WSB1_W =WEEK-SCHEDULE (MON) FAN_WSBA_D
* 323 * (TUE) FAN_WSBA_D
* 324 * (WED) FAN_WSBA_D
* 325 * (THU) FAN_WSBA_D
* 326 * (FRI) FAN_WSB_B_D
* 327 * (SAT) FULL_OFF_D
* 328 * (SUN) FULL_OFF_D
* 329 * (HOL) FAN_WSBA_D ..
* 330 *
* 331 * FAN_WSB2_W =WEEK-SCHEDULE (MON) FAN_WSBC_D
* 332 * (TUE) FAN_WSBC_D
* 333 * (WED) FAN_WSBC_D
* 334 * (THU) FAN_WSBC_D
* 335 * (FRI) FAN_WSB_B_D
* 336 * (SAT) FULL_OFF_D
* 337 * (SUN) FULL_OFF_D
* 338 * (HOL) FAN_WSBC_D ..
* 339 *
* 340 * FAN_WSB3_W =WEEK-SCHEDULE (WD) FAN_WSB_B_D
* 341 * (SAT) FULL_OFF_D
* 342 * (SUN) FULL_OFF_D
* 343 * (HOL) FAN_WSB_B_D ..
* 344 *
* 345 * HT55WSB1_W =WEEK-SCHEDULE (MON) HT55WSBA_D
* 346 * (TUE) HT55WSBA_D
* 347 * (WED) HT55WSBA_D
* 348 * (THU) HT55WSBA_D
* 349 * (FRI) HT55WSB_B_D
* 350 * (SAT) HEAT_50_D
* 351 * (SUN) HEAT_50_D
* 352 * (HOL) HT55WSBA_D ..

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* 353 *
* 354 * HT55WSB2_W =WEEK-SCHEDULE (MON) HT55WSBC_D
* 355 * (TUE) HT55WSBC_D
* 356 * (WED) HT55WSBC_D
* 357 * (THU) HT55WSBC_D
* 358 * (FRI) HT55WSBB_D
* 359 * (SAT) HEAT_50_D
* 360 * (SUN) HEAT_50_D
* 361 * (HOL) HT55WSBC_D ..
* 362 *
* 363 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 364 * (WEH) HEAT_50_D ..
* 365 *
* 366 *
* 367 * $ FULL ON SCHEDULE
* 368 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 369 *
* 370 * $ FULL OFF SCHEDULE
* 371 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 372 *
* 373 * $ HEAT SCHEDULE, 55 DEG
* 374 * HEAT55_ON =SCHEDULE THRU DEC 31 HEAT1_ON_W ..
* 375 *
* 376 * $ HEAT SCHEDULE 68 DEG
* 377 * HEAT68_ON =SCHEDULE THRU DEC 31 HEAT2_ON_W ..
* 378 *
* 379 * $ COOLING SCHEDULE
* 380 * COOL_SCHED =SCHEDULE THRU MAY 15 FULL_OFF_W
* 381 * THRU OCT 1 COOL_W
* 382 * THRU DEC 31 FULL_OFF_W ..
* 383 *
* 384 * $ COOL SCHED 80 DEH
* 385 * COOL_80 =SCHEDULE THRU MAY 15 FULL_OFF_W
* 386 * THRU OCT 1 COOL_80_W
* 387 * THRU DEC 31 FULL_OFF_W ..
* 388 *
* 389 * $ MAU SCHEDULE
* 390 * MAU_ON =SCHEDULE THRU MAY 15 MAU_ON_W
* 391 * THRU OCT 1 FULL_OFF_W
* 392 * THRU DEC 31 MAU_ON_W ..
* 393 *
* 394 * $ HV_1 ON SCHEDULE
* 395 * HV_1_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 396 *
* 397 * $ HANGAR FAN SB, WINTER
* 398 * FAN_WSB1 =SCHEDULE THRU MAY 15 FAN_WSB2_W
* 399 * THRU OCT 1 FULL_OFF_W
* 400 * THRU DEC 31 FAN_WSB2_W ..
* 401 *
* 402 * $ OPERATIONS FAN SET BACK
* 403 * FAN_WSB_2 =SCHEDULE THRU DEC 31 FAN_WSB3_W ..
* 404 *
* 405 * $ HANGER HEAT SET BACK
* 406 * HEAT_WSB_1 =SCHEDULE THRU DEC 31 HT55WSB1_W ..
* 407 *
* 408 * $ OPERATIONS HEAT W SB
* 409 * HT68_WSB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 410 *
* 411 *
* 412 *
* 413 * $ ZONE DESCRIPTION
* 414 *
* 415 * BAY_A =ZONE DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 416 * HEAT-TEMP-SCH = HEAT_WSB_1 ZONE-TYPE = CONDITIONED
* 417 * THERMOSTAT-TYPE = PROPORTIONAL
* 418 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 198000.
* 419 * SIZING-OPTION = FROM-LOADS MIN-CFM-RATIO = 1.0
* 420 * EXHAUST-STATIC = 0.75 ..
* 421 *
* 422 * BAY_B =ZONE DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 423 * HEAT-TEMP-SCH = HEAT_WSB_1 ZONE-TYPE = CONDITIONED
* 424 * THERMOSTAT-TYPE = PROPORTIONAL
* 425 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 55920.
* 426 * OUTSIDE-AIR-CFM = 55920. SIZING-OPTION = FROM-LOADS
* 427 * MIN-CFM-RATIO = 1.0 EXHAUST-STATIC = 0.75 ..
* 428 *
* 429 * ADMIN_C =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 430 * HEAT-TEMP-SCH = HT68_WSB ZONE-TYPE = CONDITIONED
* 431 * THERMOSTAT-TYPE = PROPORTIONAL
* 432 * BASEBOARD-CTRL = THERMOSTATIC
* 433 * BASEBOARD-RATING = -129500. ASSIGNED-CFM = 19600.
* 434 * OUTSIDE-AIR-CFM = 2940. SIZING-OPTION = FROM-LOADS
* 435 * EXHAUST-CFM = 2940.0 ..
* 436 *
* 437 *
* 438 * $ SYSTEM DESCRIPTION
* 439 *
* 440 * DUH =SYSTEM SYSTEM-TYPE = UHT
* 441 * MAX-SUPPLY-T = 135.0 RATED-CFM = 198000.
* 442 * FAN-SCHEDULE = FAN_WSB1 SUPPLY-DELTA-T = 0.2
* 443 * SUPPLY-KW = 0.00014 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 444 * HEATING-CAPACITY = -6739200. FURNACE-AUX = 0.
* 445 * ZONE-NAMES = (BAY_A) ..
* 446 *
* 447 * RMAU =SYSTEM SYSTEM-TYPE = SZRH
* 448 * MAX-SUPPLY-T = 135.0 MIN-SUPPLY-T = 55.0
* 449 * HEATING-SCHEDULE = MAU_ON PREHEAT-T = 15.0
* 450 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 451 * ECONO-LOW-LIMIT = 55.0 OA-CONTROL = FIXED
* 452 * SUPPLY-CFM = 55920. RATED-CFM = 55920.
* 453 * MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.37
* 454 * FAN-SCHEDULE = MAU_ON SUPPLY-DELTA-T = 2.4
* 455 * SUPPLY-KW = 0.00112 NIGHT-CYCLE-CTRL = STAY-OFF
* 456 * NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
* 457 * COOL-PT-MIN = 0. HEATING-CAPACITY = -2536800.
* 458 * FURNACE-AUX = 0.
* 459 * ZONE-NAMES = (BAY_B) ..
* 460 *

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* 461 * HV-1      =SYSTEM  SYSTEM-TYPE = HVSYS
* 462 *          MAX-SUPPLY-T = 135.0  HEATING-SCHEDULE = HV_1_ON
* 463 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 464 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 465 *          SUPPLY-CFM = 19600.  RETURN-CFM = 16660.
* 466 *          RATED-CFM = 19600.  MIN-OUTSIDE-AIR = 0.15
* 467 *          FAN-SCHEDULE = FAN_WSB_2  SUPPLY-DELTA-T = 2.4
* 468 *          SUPPLY-KW = 0.00119
* 469 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 470 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  NIGHT-VENT-DT = 0.0
* 471 *          HEATING-CAPACITY = -243400.  FURNACE-AUX = 0.
* 472 *          ZONE-NAMES = (ADMIN_C)  ..
* 473 *
* 474 * END  ..
* 475 * COMPUTE SYSTEMS  ..
* 476 *
* 477 * INPUT PLANT  ..

```



PDL PROCESSOR INPUT DATA

4/ 5/1995 14:52: 2 PDL RUN 1

```

* 478 *
* 479 *
* 480 *
* 481 *      $-----$
* 482 *      $EZ - DOE PLANTS INPUT $
* 483 *      $-----$
* 484 *
* 485 *      $ GENERAL PROJECT DATA
* 486 *
* 486 * TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 487 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 488 *      LINE-3 *      DENVER,      CO      80227      *
* 489 *
* 490 *      LINE-4 *BUILDING 2060, MNT. HANGAR AVUM      *
* 491 *      LINE-5 *MODEL WITH SET BACK      * ..
* 492 *
* 493 * ABORT      ERRORS ..
* 494 * DIAGNOSTIC      WARNINGS ..
* 495 * PLANT-REPORT      SUMMARY=(PS-A,PS-B,BEPS)
* 496 *
* 497 *      HOURLY-DATA-SAVE = YES ..
* 498 *
* 499 *      $ SCHEDULES
* 500 *
* 501 *
* 502 *
* 503 *
* 504 *
* 505 *      $ EQUIPMENT DESCRIPTION
* 506 *
* 507 * BOILER      =PLANT-EQUIPMENT      TYPE = HW-BOILER
* 508 *      SIZE = 8.4 ..
* 509 *
* 510 * ACC8      =PLANT-EQUIPMENT      TYPE = OPEN-CENT-CHLR
* 511 *      SIZE = 0.1 ..
* 512 *
* 513 * DHW      =PLANT-EQUIPMENT      TYPE = HW-BOILER
* 514 *      SIZE = 0.6 ..
* 515 *
* 516 * PLANT-PARAMETERS      OPEN-CENT-COND-TYPE = AIR      CCIRC-HEAD = 63.2
* 517 *      HCIRC-HEAD = 100.0 ..
* 518 *
* 519 *
* 520 * ENERGY-RESOURCE      RESOURCE = ELECTRICITY ..
* 521 * ENERGY-RESOURCE      RESOURCE = FUEL-OIL ..
* 522 *
* 523 *
* 524 *
* 525 * END ..
* 526 * COMPUTE PLANT ..
* 527 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	271.90	6,130.65	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	862.59	0.00	0.00
DOM HOT WTR	25.55	543.79	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	397.04	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	259.56	0.00	0.00
	-----	-----	-----
TOTAL	1,816.63	6,674.45	0.00

TOTAL SITE ENERGY 8491.05 MBTU 175.5 KBTU/SQFT-YR GROSS-AREA 175.5 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 12129.75 MBTU 250.8 KBTU/SQFT-YR GROSS-AREA 250.8 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.1  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	201.451	1556.348
JAN	PEAK (KBTU)	786.494	8532.827
	DY/HR	5/14	24/ 5
	TOTAL (MBTU)	175.927	1062.697
FEB	PEAK (KBTU)	775.967	7522.946
	DY/HR	14/14	14/ 5
	TOTAL (MBTU)	192.132	1046.211
MAR	PEAK (KBTU)	772.441	7002.586
	DY/HR	3/14	28/ 5
	TOTAL (MBTU)	143.839	377.972
APR	PEAK (KBTU)	727.414	6430.143
	DY/HR	1/10	4/ 5
	TOTAL (MBTU)	111.927	137.584
MAY	PEAK (KBTU)	679.302	3590.305
	DY/HR	2/14	3/ 6
	TOTAL (MBTU)	86.854	59.948
JUN	PEAK (KBTU)	365.969	465.511
	DY/HR	29/14	8/12
	TOTAL (MBTU)	80.657	49.065
JUL	PEAK (KBTU)	365.969	413.000
	DY/HR	28/14	28/12
	TOTAL (MBTU)	89.672	59.128
AUG	PEAK (KBTU)	365.969	435.545
	DY/HR	30/14	30/12
	TOTAL (MBTU)	89.462	71.273
SEP	PEAK (KBTU)	365.969	476.974
	DY/HR	29/14	23/12
	TOTAL (MBTU)	136.919	261.586
OCT	PEAK (KBTU)	707.215	4604.947
	DY/HR	26/13	31/ 6
	TOTAL (MBTU)	165.626	641.499
NOV	PEAK (KBTU)	765.173	6811.792
	DY/HR	28/14	28/ 6
	TOTAL (MBTU)	187.455	1088.130
DEC	PEAK (KBTU)	773.178	7543.772
	DY/HR	30/14	26/ 6
	ONE YEAR	1661.921	6411.443
	USE/PEAK	786.494	8532.827

LDL PROCESSOR INPUT DATA

3/19/1995 10: 1:47 LDL RUN 1

```

* 3 *
* 4 *
* 5 *           $-----$
* 6 *           $ E Z - D O E   L O A D S   I N P U T $
* 7 *           $-----$
* 8 *
* 9 *           $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 12 *        LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 *        LINE-3 *      DENVER,      CO      80227      *
* 14 *
* 15 *        LINE-4 *BUILDING 2060, MNT. HANGAR AVUM      *
* 16 *        LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 17 *
* 18 * ABORT      ERRORS ..
* 19 * DIAGNOSTIC  WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 *                X-REF = 0.0
* 23 *                Y-REF = 0.0 ..
* 24 * RUN-PERIOD   JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 *           $ SCHEDULES
* 28 *
* 29 * FULL_ON_D  =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.2)
* 34 *                (6,7) (0.35)
* 35 *                (8,9) (0.5,0.7)
* 36 *                (10,11) (0.9)
* 37 *                (12) (0.8)
* 38 *                (13,14) (0.9)
* 39 *                (15) (0.5)
* 40 *                (16,18) (0.4)
* 41 *                (19) (0.3)
* 42 *                (20,24) (0.2) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 *                (7,19) (0.07)
* 46 *                (20,24) (0.23) ..
* 47 *
* 48 * PEOPLE_D   =DAY-SCHEDULE (1,4) (0.)
* 49 *                (5,6) (0.1)
* 50 *                (7) (0.5)
* 51 *                (8,11) (1.)
* 52 *                (12) (0.8)
* 53 *                (13,16) (1.)
* 54 *                (17,18) (0.5,0.1)
* 55 *                (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.)
* 58 *                (6,10) (0.3,0.4,0.5,0.6,0.8)
* 59 *                (11,13) (0.7,0.5,0.8)
* 60 *                (14,15) (0.9)
* 61 *                (16,18) (0.8,0.5,0.1)
* 62 *                (19,24) (0.) ..
* 63 *
* 64 * DHW_D      =DAY-SCHEDULE (1,6) (0.)
* 65 *                (7,8) (0.1,0.2)
* 66 *                (9,10) (0.1)
* 67 *                (11,13) (0.2,0.4,0.3)
* 68 *                (14,16) (0.2)
* 69 *                (17) (0.1)
* 70 *                (18,24) (0.) ..
* 71 *
* 72 *
* 73 * FULL_ON_W  =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 *                (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W   =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 *                (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W    =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 *                (WEH) FULL_OFF_D ..
* 85 *
* 86 * BAY_INFL_W =WEEK-SCHEDULE (WD) FULL_ON_D
* 87 *                (WEH) FULL_OFF_D ..
* 88 *
* 89 * DHW_W      =WEEK-SCHEDULE (WD) DHW_D
* 90 *                (WEH) FULL_OFF_D ..
* 91 *
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF  =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ BAY INFILTRATION SCHED
* 106 * BAY_INFILT =SCHEDULE THRU DEC 31 BAY_INFL_W ..
* 107 *
* 108 * $ DOMESTIC HW SCHEDULE
* 109 * DHW_SCHD =SCHEDULE THRU DEC 31 DHW_W ..
* 110 *
* 111 * $ FULL ON SCHEDULE
* 112 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 113 *
* 114 *
* 115 *
* 116 * $ CONSTRUCTION TYPES
* 117 *
* 118 *
* 119 *
* 120 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 121 *
* 122 * $ ADMINISTRATION ROOF CONSTRUCTION
* 123 * ADMROOF =CONSTRUCTION U-VALUE = 0.050 ..
* 124 *
* 125 * $ ROOF CONSTRUCTION
* 126 * CEILING =LAYERS MATERIAL=(AS01,IN76,HF-E3)
* 127 * THICKNESS=(0.005,0.250,0.031) ..
* 128 * ROOFCON =CONSTRUCTION LAYERS = CEILING ..
* 129 * WALLCON =CONSTRUCTION U-VALUE = 0.200 ..
* 130 * INWALL =CONSTRUCTION U-VALUE = 20.000 ..
* 131 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 132 *
* 133 * G_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000
* 134 * PANES = 1
* 135 * GLASS-CONDUCTANCE = 1.130 ..
* 136 *
* 137 *
* 138 *
* 139 *
* 140 * $ SPACE DESCRIPTION
* 141 *
* 142 * BAY_A =SPACE AREA = 18914.0 VOLUME = 699818.0
* 143 * AZIMUTH = 315 TEMPERATURE = (57.)
* 144 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 145 * NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0
* 146 * LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8
* 147 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 148 * EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 15.0
* 149 * SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE
* 150 * AIR-CHANGES/HR = 0.89 INF-SCHEDULE = BAY_INFILT ..
* 151 *
* 152 * U-W HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON
* 153 * AZIMUTH = 315 ..
* 154 *
* 155 * ROOF HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON
* 156 * AZIMUTH = 315 TILT = 0 ..
* 157 *
* 158 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 159 * AZIMUTH = 45 ..
* 160 *
* 161 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 162 * AZIMUTH = 225 ..
* 163 *
* 164 * E-W HEIGHT = 37.0 WIDTH = 386.0 CONS = WALLCON
* 165 * AZIMUTH = 315 ..
* 166 *
* 167 * DOOR HEIGHT = 14.0 WIDTH = 30.5 CONS = DOORCON
* 168 * MULTIPLIER = 10.0 ..
* 169 *
* 170 * I-W HEIGHT = 37.0 WIDTH = 1000.0 CONS = INWALL
* 171 * AZIMUTH = 135 NEXT-TO = BAY_B ..
* 172 *
* 173 *
* 174 * BAY_B =SPACE AREA = 18914.0 VOLUME = 699818.0
* 175 * AZIMUTH = 315 TEMPERATURE = (57.)
* 176 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 177 * NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0
* 178 * LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8
* 179 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 180 * EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 15.0
* 181 * SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE
* 182 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 183 *
* 184 * U-W HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON
* 185 * AZIMUTH = 315 ..
* 186 *
* 187 * ROOF HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON
* 188 * AZIMUTH = 315 TILT = 0 ..
* 189 *
* 190 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 191 * AZIMUTH = 45 ..
* 192 *
* 193 * E-W HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 194 * AZIMUTH = 225 ..
* 195 *
* 196 * E-W HEIGHT = 37.0 WIDTH = 192.0 CONS = WALLCON
* 197 * AZIMUTH = 135 ..
* 198 *
* 199 *
* 200 * ADMIN_C =SPACE AREA = 10545.0 VOLUME = 168720.0
* 201 * AZIMUTH = 315 TEMPERATURE = (68.)
* 202 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 203 * NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 550.0
* 204 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 0.76
* 205 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 206 * EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 7.5
* 207 * SOURCE-SCHEDULE = DHW_SCHD SOURCE-TYPE = HOT-WATER
* 208 * SOURCE-BTU/HR = 640000.0 SOURCE-SENSIBLE = 0.02
* 209 * SOURCE-LATENT = 0.01 INF-METHOD = AIR-CHANGE
* 210 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..

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* 211 *
* 212 *      U-W      HEIGHT = 56.0  WIDTH = 188.0  CONS = FLOORCON
* 213 *      AZIMUTH = 315      ..
* 214 *
* 215 *      ROOF      HEIGHT = 56.0  WIDTH = 188.0  CONS = ADMROOF
* 216 *      AZIMUTH = 315  TILT = 0      ..
* 217 *
* 218 *      E-W      HEIGHT = 16.0  WIDTH = 56.0  CONS = WALLCON
* 219 *      AZIMUTH = 225      ..
* 220 *
* 221 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 222 *      MULTIPLIER = 2.0      ..
* 223 *
* 224 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 225 *      MULTIPLIER = 2.0      ..
* 226 *
* 227 *      DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 228 *      MULTIPLIER = 3.0      ..
* 229 *
* 230 *      E-W      HEIGHT = 16.0  WIDTH = 186.0  CONS = WALLCON
* 231 *      AZIMUTH = 135      ..
* 232 *
* 233 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 234 *      MULTIPLIER = 23.0      ..
* 235 *
* 236 *      DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 237 *      MULTIPLIER = 4.0      ..
* 238 *
* 239 *      E-W      HEIGHT = 16.0  WIDTH = 56.0  CONS = WALLCON
* 240 *      AZIMUTH = 45      ..
* 241 *
* 242 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 243 *      MULTIPLIER = 2.0      ..
* 244 *
* 245 *      DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 246 *      MULTIPLIER = 5.0      ..
* 247 *
* 248 *
* 249 *      END      ..
* 250 *      COMPUTE LOADS      ..
* 251 *
* 252 *      INPUT SYSTEMS      ..

```

**COMPUTER SIMULATIONS**  
**BUILDING 2060**

RUN 3 - DDC

SDL PROCESSOR INPUT DATA

3/19/1995 10: 1:47 SDL RUN 1

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* 253 *
* 254 *
* 255 *
* 256 *
* 257 *
* 258 *
* 259 *
* 260 *
* 261 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 262 * LINE-2 *EZDOB - ELITE SOFTWARE DEVELOPMENT INC*
* 263 * LINE-3 * DENVER, CO 80227 *
* 264 *
* 265 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 266 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 267 * ABORT ERRORS ..
* 268 * DIAGNOSTIC WARNINGS ..
* 269 * SYSTEMS-REPORT VERIFICATION=(SV-B)
* 270 * SUMMARY=(SS-A,SS-B,SS-C,SS-F,SS-G,SS-K,SS-L,
* 271 * SS-M)
* 272 * HOURLY-DATA-SAVE = YES ..
* 273 *
* 274 *
* 275 *
* 276 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 277 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 278 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (55.) ..
* 279 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (68.) ..
* 280 * COOL_D =DAY-SCHEDULE (1,24) (75.) ..
* 281 * COOL_80_D =DAY-SCHEDULE (1,24) (80.) ..
* 282 * MAU_ON_D =DAY-SCHEDULE (1,8) (0.)
* 283 * (9,16) (1.)
* 284 * (17,24) (0.) ..
* 285 * FAN_WSBA_D =DAY-SCHEDULE (1,4) (0.)
* 286 * (5,21) (1.)
* 287 * (22,24) (0.) ..
* 288 * FAN_WSBB_D =DAY-SCHEDULE (1,4) (0.)
* 289 * (5,17) (1.)
* 290 * (18,24) (0.) ..
* 291 * FAN_WSBC_D =DAY-SCHEDULE (1,2) (1.)
* 292 * (3,4) (0.)
* 293 * (5,24) (1.) ..
* 294 * HT55WSBA_D =DAY-SCHEDULE (1,4) (50.)
* 295 * (5,21) (55.)
* 296 * (22,24) (50.) ..
* 297 * HT55WSBB_D =DAY-SCHEDULE (1,4) (50.)
* 298 * (5,17) (55.)
* 299 * (18,24) (50.) ..
* 300 * HT55WSBC_D =DAY-SCHEDULE (1,2) (55.)
* 301 * (3,4) (50.)
* 302 * (5,24) (55.) ..
* 303 * HT68_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 304 * (5,17) (68.)
* 305 * (18,24) (50.) ..
* 306 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 307 *
* 308 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 309 *
* 310 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 311 *
* 312 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 313 *
* 314 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 315 *
* 316 * COOL_W =WEEK-SCHEDULE (ALL) COOL_D ..
* 317 *
* 318 * COOL_80_W =WEEK-SCHEDULE (ALL) COOL_80_D ..
* 319 *
* 320 * MAU_ON_W =WEEK-SCHEDULE (WD) MAU_ON_D
* 321 * (WEH) FULL_OFF_D ..
* 322 *
* 323 * FAN_WSB1_W =WEEK-SCHEDULE (MON) FAN_WSBA_D
* 324 * (TUE) FAN_WSBA_D
* 325 * (WED) FAN_WSBA_D
* 326 * (THU) FAN_WSBA_D
* 327 * (FRI) FAN_WSBB_D
* 328 * (SAT) FULL_OFF_D
* 329 * (SUN) FULL_OFF_D
* 330 * (HOL) FAN_WSBA_D ..
* 331 *
* 332 * FAN_WSB2_W =WEEK-SCHEDULE (MON) FAN_WSBC_D
* 333 * (TUE) FAN_WSBC_D
* 334 * (WED) FAN_WSBC_D
* 335 * (THU) FAN_WSBC_D
* 336 * (FRI) FAN_WSBB_D
* 337 * (SAT) FULL_OFF_D
* 338 * (SUN) FULL_OFF_D
* 339 * (HOL) FAN_WSBC_D ..
* 340 *
* 341 * FAN_WSB3_W =WEEK-SCHEDULE (ALL) FAN_WSBB_D ..
* 342 *
* 343 * HT55WSB1_W =WEEK-SCHEDULE (MON) HT55WSBA_D
* 344 * (TUE) HT55WSBA_D
* 345 * (WED) HT55WSBA_D
* 346 * (THU) HT55WSBA_D
* 347 * (FRI) HT55WSBB_D
* 348 * (SAT) HEAT_50_D
* 349 * (SUN) HEAT_50_D
* 350 * (HOL) HT55WSBA_D ..
* 351 *
* 352 * HT55WSB2_W =WEEK-SCHEDULE (MON) HT55WSBC_D

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* 353 *          (TUE) HT55WSBC_D
* 354 *          (WED) HT55WSBC_D
* 355 *          (THU) HT55WSBC_D
* 356 *          (FRI) HT55WSBB_D
* 357 *          (SAT) HEAT_50_D
* 358 *          (SUN) HEAT_50_D
* 359 *          (HOL) HT55WSBC_D ..
* 360 *
* 361 * HT68_WSB_W =WEEK-SCHEDULE (ALL) HT68_WSB_D ..
* 362 *
* 363 *
* 364 * $ FULL ON SCHEDULE
* 365 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 366 *
* 367 * $ FULL OFF SCHEDULE
* 368 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 369 *
* 370 * $ HEAT SCHEDULE, 55 DEG
* 371 * HEAT55_ON =SCHEDULE THRU MAY 15 HEAT1_ON_W
* 372 * THRU OCT 1 FULL_OFF_W
* 373 * THRU DEC 31 HEAT1_ON_W ..
* 374 *
* 375 * $ HEAT SCHEDULE 68 DEG
* 376 * HEAT68_ON =SCHEDULE THRU MAY 15 HEAT2_ON_W
* 377 * THRU OCT 1 FULL_OFF_W
* 378 * THRU DEC 31 HEAT2_ON_W ..
* 379 *
* 380 * $ COOLING SCHEDULE
* 381 * COOL_SCHED =SCHEDULE THRU MAY 15 FULL_OFF_W
* 382 * THRU OCT 1 COOL_W
* 383 * THRU DEC 31 FULL_OFF_W ..
* 384 *
* 385 * $ COOL SCHED 80 DEH
* 386 * COOL_80 =SCHEDULE THRU MAY 15 FULL_OFF_W
* 387 * THRU OCT 1 COOL_80_W
* 388 * THRU DEC 31 FULL_OFF_W ..
* 389 *
* 390 * $ MAU SCHEDULE
* 391 * MAU_ON =SCHEDULE THRU MAY 15 MAU_ON_W
* 392 * THRU OCT 1 FULL_OFF_W
* 393 * THRU DEC 31 MAU_ON_W ..
* 394 *
* 395 * $ HV_1 ON SCHEDULE
* 396 * HV_1_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 397 *
* 398 * $ HANGAR FAN SB, WINTER
* 399 * FAN_WSB1 =SCHEDULE THRU MAY 15 FAN_WSB2_W
* 400 * THRU OCT 1 FULL_OFF_W
* 401 * THRU DEC 31 FAN_WSB2_W ..
* 402 *
* 403 * $ OPERATIONS FAN SET BACK
* 404 * FAN_WSB_2 =SCHEDULE THRU DEC 31 FAN_WSB3_W ..
* 405 *
* 406 * $ HANGER HEAT SET BACK
* 407 * HEAT_WSB_1 =SCHEDULE THRU DEC 31 HT55WSB1_W ..
* 408 *
* 409 * $ OPERATIONS HEAT W SB
* 410 * HT68_WSB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 411 *
* 412 *
* 413 *
* 414 * $ ZONE DESCRIPTION
* 415 *
* 416 * BAY_A =ZONE DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 417 * HEAT-TEMP-SCH = HEAT_WSB_1 ZONE-TYPE = CONDITIONED
* 418 * THERMOSTAT-TYPE = PROPORTIONAL
* 419 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 198000.
* 420 * SIZING-OPTION = FROM-LOADS MIN-CFM-RATIO = 1.0
* 421 * EXHAUST-STATIC = 0.75 ..
* 422 *
* 423 * BAY_B =ZONE DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 424 * HEAT-TEMP-SCH = HEAT_WSB_1 ZONE-TYPE = CONDITIONED
* 425 * THERMOSTAT-TYPE = PROPORTIONAL
* 426 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 55920.
* 427 * OUTSIDE-AIR-CFM = 55920. SIZING-OPTION = FROM-LOADS
* 428 * MIN-CFM-RATIO = 1.0 EXHAUST-STATIC = 0.75 ..
* 429 *
* 430 * ADMIN_C =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 431 * HEAT-TEMP-SCH = HT68_WSB ZONE-TYPE = CONDITIONED
* 432 * THERMOSTAT-TYPE = PROPORTIONAL
* 433 * BASEBOARD-CTRL = THERMOSTATIC
* 434 * BASEBOARD-RATING = -129500. ASSIGNED-CFM = 19600.
* 435 * OUTSIDE-AIR-CFM = 2940. SIZING-OPTION = FROM-LOADS
* 436 * EXHAUST-CFM = 2940.0 ..
* 437 *
* 438 *
* 439 * $ SYSTEM DESCRIPTION
* 440 *
* 441 * DUH =SYSTEM SYSTEM-TYPE = UHT
* 442 * MAX-SUPPLY-T = 135.0 RATED-CFM = 198000.
* 443 * FAN-SCHEDULE = FAN_WSB1 SUPPLY-DELTA-T = 0.2
* 444 * SUPPLY-KW = 0.00014 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 445 * HEATING-CAPACITY = -6739200. FURNACE-AUX = 0.
* 446 * ZONE-NAMES = (BAY_A) ..
* 447 *
* 448 * RMAU =SYSTEM SYSTEM-TYPE = SZRH
* 449 * MAX-SUPPLY-T = 135.0 MIN-SUPPLY-T = 55.0
* 450 * HEATING-SCHEDULE = MAU_ON PREHEAT-T = 15.0
* 451 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 452 * ECONO-LOW-LIMIT = 55.0 OA-CONTROL = FIXED
* 453 * SUPPLY-CFM = 55920. RATED-CFM = 55920.
* 454 * MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.37
* 455 * FAN-SCHEDULE = MAU_ON SUPPLY-DELTA-T = 2.4
* 456 * SUPPLY-KW = 0.00112 NIGHT-CYCLE-CTRL = STAY-OFF
* 457 * NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
* 458 * COOL-FT-MIN = 0. HEATING-CAPACITY = -2536800.
* 459 * FURNACE-AUX = 0.
* 460 * ZONE-NAMES = (BAY_B) ..

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```

* 461 *
* 462 * HV-1      =SYSTEM  SYSTEM-TYPE = HVSYS
* 463 *          MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HV_1_ON
* 464 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 465 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 466 *          SUPPLY-CFM = 19600. RETURN-CFM = 16660.
* 467 *          RATED-CFM = 19600. MIN-OUTSIDE-AIR = 0.15
* 468 *          FAN-SCHEDULE = FAN_WSB_2 SUPPLY-DELTA-T = 2.4
* 469 *          SUPPLY-KW = 0.00119
* 470 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 471 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 472 *          HEATING-CAPACITY = -243400. FURNACE-AUX = 0.
* 473 *          ZONE-NAMES = (ADMIN_C) ..
* 474 *
* 475 * END ..
* 476 * COMPUTE SYSTEMS ..
* 477 *
* 478 * INPUT PLANT ..

```

PDL PROCESSOR INPUT DATA

3/19/1995 10: 1:47 PDL RUN 1

```

* 479 *
* 480 *
* 481 *
* 482 * $-----$
* 483 * $ E Z - D O E P L A N T S I N P U T $
* 484 * $-----$
* 485 *
* 486 * $ GENERAL PROJECT DATA
* 487 *
* 488 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 489 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 490 * LINE-3 * DENVER, CO 80227 *
* 491 *
* 492 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 493 * LINE-5 *MODEL WITH SET BACK AND DDC *
* 494 *
* 495 * ABORT ERRORS ..
* 496 * DIAGNOSTIC WARNINGS ..
* 497 * PLANT-REPORT SUMMARY= (PS-A,PS-B,BEPS)
* 498 *
* 499 * HOURLY-DATA-SAVE = YES ..
* 500 *
* 501 * $ SCHEDULES
* 502 *
* 503 *
* 504 *
* 505 *
* 506 * $ EQUIPMENT DESCRIPTION
* 507 *
* 508 * BOILER =PLANT-EQUIPMENT TYPE = HW-BOILER
* 509 * SIZE = 8.4 ..
* 510 *
* 511 * ACC8 =PLANT-EQUIPMENT TYPE = OPEN-CENT-CHLR
* 512 * SIZE = 0.1 ..
* 513 *
* 514 * DHW =PLANT-EQUIPMENT TYPE = HW-BOILER
* 515 * SIZE = 0.6 ..
* 516 *
* 517 * PLANT-PARAMETERS OPEN-CENT-COND-TYPE = AIR CCIRC-HEAD = 63.2
* 518 * HCIRC-HEAD = 100.0 ..
* 519 *
* 520 *
* 521 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 522 * ENERGY-RESOURCE RESOURCE = FUEL-OIL ..
* 523 *
* 524 *
* 525 *
* 526 * END ..
* 527 * COMPUTE PLANT ..
* 528 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	263.30	5,902.15	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	848.57	0.00	0.00
DOM HOT WTR	26.10	546.72	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	397.03	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	259.56	0.00	0.00
	-----	-----	-----
TOTAL	1,794.58	6,448.87	0.00

TOTAL SITE ENERGY 8243.44 MBTU 170.4 KBTU/SQFT-YR GROSS-AREA 170.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 11837.95 MBTU 244.7 KBTU/SQFT-YR GROSS-AREA 244.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 1.4  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	214.385	1582.559
JAN	PEAK (KBTU)	786.427	8521.037
	DY/HR	5/14	24/ 5
	TOTAL (MBTU)	186.968	1077.526
FEB	PEAK (KBTU)	775.901	7516.637
	DY/HR	14/14	14/ 5
	TOTAL (MBTU)	204.015	1051.163
MAR	PEAK (KBTU)	772.375	7005.229
	DY/HR	3/14	28/ 5
	TOTAL (MBTU)	157.072	374.451
APR	PEAK (KBTU)	722.670	6355.310
	DY/HR	1/10	4/ 5
	TOTAL (MBTU)	123.171	131.786
MAY	PEAK (KBTU)	671.681	3502.395
	DY/HR	2/14	3/ 6
	TOTAL (MBTU)	93.841	55.010
JUN	PEAK (KBTU)	365.903	425.532
	DY/HR	20/14	20/12
	TOTAL (MBTU)	91.617	49.670
JUL	PEAK (KBTU)	365.903	405.652
	DY/HR	28/14	28/12
	TOTAL (MBTU)	96.699	55.932
AUG	PEAK (KBTU)	365.903	427.341
	DY/HR	30/14	30/12
	TOTAL (MBTU)	97.649	67.063
SEP	PEAK (KBTU)	365.903	428.273
	DY/HR	28/14	15/12
	TOTAL (MBTU)	151.094	256.304
OCT	PEAK (KBTU)	702.720	4381.661
	DY/HR	26/13	31/ 6
	TOTAL (MBTU)	177.459	639.706
NOV	PEAK (KBTU)	763.903	6800.820
	DY/HR	28/14	28/ 6
	TOTAL (MBTU)	200.593	1107.701
DEC	PEAK (KBTU)	773.112	7521.751
	DY/HR	30/14	26/ 6
	ONE YEAR	1794.564	6448.871
	USE/PEAK	786.427	8521.037

**COMPUTER SIMULATIONS**  
**BUILDING 2060**

**RUN 4 - FORCED VENTILATION**

LDL PROCESSOR INPUT DATA

4/ 5/1995 13:38:48 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $EZ - DOE LOADS INPUT$
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 16 * LINE-5 *SETBACK, DDC, & FORCED VENTILATION * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 * X-REF = 0.0
* 23 * Y-REF = 0.0 ..
* 24 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 * $ SCHEDULES
* 28 *
* 29 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.2)
* 34 * (6,7) (0.35)
* 35 * (8,9) (0.5,0.7)
* 36 * (10,11) (0.9)
* 37 * (12) (0.8)
* 38 * (13,14) (0.9)
* 39 * (15) (0.5)
* 40 * (16,18) (0.4)
* 41 * (19) (0.3)
* 42 * (20,24) (0.2) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 * (7,19) (0.07)
* 46 * (20,24) (0.23) ..
* 47 *
* 48 * PEOPLE_D =DAY-SCHEDULE (1,4) (0.)
* 49 * (5,6) (0.1)
* 50 * (7) (0.5)
* 51 * (8,11) (1.)
* 52 * (12) (0.8)
* 53 * (13,16) (1.)
* 54 * (17,18) (0.5,0.1)
* 55 * (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.)
* 58 * (6,10) (0.3,0.4,0.5,0.6,0.8)
* 59 * (11,13) (0.7,0.5,0.8)
* 60 * (14,15) (0.9)
* 61 * (16,18) (0.8,0.5,0.1)
* 62 * (19,24) (0.) ..
* 63 *
* 64 * DHW_D =DAY-SCHEDULE (1,6) (0.)
* 65 * (7,8) (0.1,0.2)
* 66 * (9,10) (0.1)
* 67 * (11,13) (0.2,0.4,0.3)
* 68 * (14,16) (0.2)
* 69 * (17) (0.1)
* 70 * (18,24) (0.) ..
* 71 *
* 72 *
* 73 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 * (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 * (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 * (WEH) FULL_OFF_D ..
* 85 *
* 86 * BAY_INFL_W =WEEK-SCHEDULE (WD) FULL_ON_D
* 87 * (WEH) FULL_OFF_D ..
* 88 *
* 89 * DHW_W =WEEK-SCHEDULE (WD) DHW_D
* 90 * (WEH) FULL_OFF_D ..
* 91 *
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ BAY INFILTRATION SCHED
* 106 * BAY_INFILT =SCHEDULE THRU DEC 31 BAY_INFL_W ..
* 107 *
* 108 * $ DOMESTIC HW SCHEDULE
* 109 * DHW_SCHD =SCHEDULE THRU DEC 31 DHW_W ..
* 110 *
* 111 * $ FULL ON SCHEDULE
* 112 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 113 *
* 114 *
* 115 *
* 116 *           $ CONSTRUCTION TYPES
* 117 *
* 118 *
* 119 *
* 120 * FLOORCON =CONSTRUCTION    U-VALUE = 0.010 ..
* 121 *
* 122 * $ ADMINISTRATION ROOF CONSTRUCTION
* 123 * ADMROOF =CONSTRUCTION    U-VALUE = 0.050 ..
* 124 *
* 125 * $ ROOF CONSTRUCTION
* 126 * CEILING =LAYERS          MATERIAL=(AS01,IN76,HF-E3)
* 127 *                                     THICKNESS=(0.005,0.250,0.031) ..
* 128 * ROOFCON =CONSTRUCTION    LAYERS = CEILING ..
* 129 * WALLCON =CONSTRUCTION    U-VALUE = 0.200 ..
* 130 * INWALL =CONSTRUCTION    U-VALUE = 20.000 ..
* 131 * DOORCON =CONSTRUCTION    U-VALUE = 0.400 ..
* 132 *
* 133 * G_TYPE1 =GLASS-TYPE      SHADING-COEF = 1.000
* 134 *                                     PANES = 1
* 135 *                                     GLASS-CONDUCTANCE = 1.130 ..
* 136 *
* 137 *
* 138 *
* 139 *
* 140 *           $ SPACE DESCRIPTION
* 141 *
* 142 * BAY_A =SPACE              AREA = 18914.0 VOLUME = 699818.0
* 143 *                               AZIMUTH = 315 TEMPERATURE = (57.)
* 144 *                               ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 145 *                               NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0
* 146 *                               LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8
* 147 *                               LIGHTING-SCHEDULE = LIGHT_SCHD
* 148 *                               EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 15.0
* 149 *                               SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE
* 150 *                               AIR-CHANGES/HR = 0.89 INF-SCHEDULE = BAY_INFILT ..
* 151 *
* 152 * U-W          HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON
* 153 *                               AZIMUTH = 315 ..
* 154 *
* 155 * ROOF          HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON
* 156 *                               AZIMUTH = 315 TILT = 0 ..
* 157 *
* 158 * E-W          HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 159 *                               AZIMUTH = 45 ..
* 160 *
* 161 * E-W          HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 162 *                               AZIMUTH = 225 ..
* 163 *
* 164 * E-W          HEIGHT = 37.0 WIDTH = 386.0 CONS = WALLCON
* 165 *                               AZIMUTH = 315 ..
* 166 *
* 167 * DOOR          HEIGHT = 14.0 WIDTH = 30.5 CONS = DOORCON
* 168 *                               MULTIPLIER = 10.0 ..
* 169 *
* 170 * I-W          HEIGHT = 37.0 WIDTH = 1000.0 CONS = INWALL
* 171 *                               AZIMUTH = 135 NEXT-TO = BAY_B ..
* 172 *
* 173 *
* 174 * BAY_B =SPACE              AREA = 18914.0 VOLUME = 699818.0
* 175 *                               AZIMUTH = 315 TEMPERATURE = (57.)
* 176 *                               ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 177 *                               NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 700.0
* 178 *                               LIGHTING-TYPE = INCAND LIGHTING-W/SQFT = 0.8
* 179 *                               LIGHTING-SCHEDULE = LIGHT_SCHD
* 180 *                               EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 15.0
* 181 *                               SOURCE-SENSIBLE = 0.0 INF-METHOD = AIR-CHANGE
* 182 *                               AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 183 *
* 184 * U-W          HEIGHT = 48.0 WIDTH = 386.0 CONS = FLOORCON
* 185 *                               AZIMUTH = 315 ..
* 186 *
* 187 * ROOF          HEIGHT = 48.0 WIDTH = 386.0 CONS = ROOFCON
* 188 *                               AZIMUTH = 315 TILT = 0 ..
* 189 *
* 190 * E-W          HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 191 *                               AZIMUTH = 45 ..
* 192 *
* 193 * E-W          HEIGHT = 37.0 WIDTH = 48.0 CONS = WALLCON
* 194 *                               AZIMUTH = 225 ..
* 195 *
* 196 * E-W          HEIGHT = 37.0 WIDTH = 192.0 CONS = WALLCON
* 197 *                               AZIMUTH = 135 ..
* 198 *
* 199 *
* 200 * ADMIN_C =SPACE              AREA = 10545.0 VOLUME = 168720.0
* 201 *                               AZIMUTH = 315 TEMPERATURE = (68.)
* 202 *                               ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 203 *                               NUMBER-OF-PEOPLE = 20.0 PEOPLE-HEAT-GAIN = 550.0
* 204 *                               LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 0.76
* 205 *                               LIGHTING-SCHEDULE = LIGHT_SCHD
* 206 *                               EQUIP-SCHEDULE = EQUIP_SCHD EQUIPMENT-KW = 7.5
* 207 *                               SOURCE-SCHEDULE = DHW_SCHD SOURCE-TYPE = HOT-WATER
* 208 *                               SOURCE-BTU/HR = 640000.0 SOURCE-SENSIBLE = 0.02
* 209 *                               SOURCE-LATENT = 0.01 INF-METHOD = AIR-CHANGE
* 210 *                               AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..

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* 211 *
* 212 *
* 213 *      U-W      HEIGHT = 56.0  WIDTH = 188.0  CONS = FLOORCON
* 214 *      AZIMUTH = 315      ..
* 215 *
* 216 *      ROOF      HEIGHT = 56.0  WIDTH = 188.0  CONS = ADMROOF
* 217 *      AZIMUTH = 315  TILT = 0      ..
* 218 *
* 219 *      E-W      HEIGHT = 16.0  WIDTH = 56.0  CONS = WALLCON
* 220 *      AZIMUTH = 225      ..
* 221 *
* 222 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 223 *      MULTIPLIER = 2.0      ..
* 224 *
* 225 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 226 *      MULTIPLIER = 2.0      ..
* 227 *
* 228 *      DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 229 *      MULTIPLIER = 3.0      ..
* 230 *
* 231 *      E-W      HEIGHT = 16.0  WIDTH = 186.0  CONS = WALLCON
* 232 *      AZIMUTH = 135      ..
* 233 *
* 234 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 235 *      MULTIPLIER = 23.0      ..
* 236 *
* 237 *      DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 238 *      MULTIPLIER = 4.0      ..
* 239 *
* 240 *      E-W      HEIGHT = 16.0  WIDTH = 56.0  CONS = WALLCON
* 241 *      AZIMUTH = 45      ..
* 242 *
* 243 *      WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 244 *      MULTIPLIER = 2.0      ..
* 245 *
* 246 *      DOOR  HEIGHT = 7.5  WIDTH = 3.0  CONS = DOORCON
* 247 *      MULTIPLIER = 5.0      ..
* 248 *
* 249 *      END      ..
* 250 *      COMPUTE LOADS      ..
* 251 *
* 252 *      INPUT SYSTEMS      ..

```

SDL PROCESSOR INPUT DATA

4/ 5/1995 13:38:48 SDL RUN 1

```

* 253 *
* 254 *
* 255 *
* 256 * $-----$
* 257 * $EZ - DOE SYSTEMS INPUT$
* 258 * $-----$
* 259 *
* 260 * $ GENERAL PROJECT DATA
* 261 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 262 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 263 * LINE-3 * DENVER, CO 80227 *
* 264 *
* 265 * LINE-4 *BUILDING 2060, MNT. HANGAR AVUM *
* 266 * LINE-5 *SETBACK, DDC, & FORCED VENTILATION * ..
* 267 * ABORT ERRORS ..
* 268 * DIAGNOSTIC WARNINGS ..
* 269 * SYSTEMS-REPORT VERIFICATION=(SV-B)
* 270 * SUMMARY=(SS-A,SS-B,SS-C,SS-K,SS-L,SS-M)
* 271 * HOURLY-DATA-SAVE = YES ..
* 272 *
* 273 * $ SCHEDULES
* 274 *
* 275 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 276 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 277 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (55.) ..
* 278 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (68.) ..
* 279 * COOL_D =DAY-SCHEDULE (1,24) (75.) ..
* 280 * COOL_80_D =DAY-SCHEDULE (1,24) (80.) ..
* 281 * MAU_ON_D =DAY-SCHEDULE (1,8) (0.)
* 282 * (9,16) (1.)
* 283 * (17,24) (0.) ..
* 284 * FAN_WSBA_D =DAY-SCHEDULE (1,4) (0.)
* 285 * (5,21) (1.)
* 286 * (22,24) (0.) ..
* 287 * FAN_WSB_B_D =DAY-SCHEDULE (1,4) (0.)
* 288 * (5,17) (1.)
* 289 * (18,24) (0.) ..
* 290 * FAN_WSBC_D =DAY-SCHEDULE (1,2) (1.)
* 291 * (3,4) (0.)
* 292 * (5,24) (1.) ..
* 293 * HT55WSBA_D =DAY-SCHEDULE (1,4) (50.)
* 294 * (5,21) (55.)
* 295 * (22,24) (50.) ..
* 296 * HT55WSB_B_D =DAY-SCHEDULE (1,4) (50.)
* 297 * (5,17) (55.)
* 298 * (18,24) (50.) ..
* 299 * HT55WSBC_D =DAY-SCHEDULE (1,2) (55.)
* 300 * (3,4) (50.)
* 301 * (5,24) (55.) ..
* 302 * HT68_WSB_D =DAY-SCHEDULE (1,4) (50.)
* 303 * (5,17) (68.)
* 304 * (18,24) (50.) ..
* 305 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 306 * MOA_15_D =DAY-SCHEDULE (1,5) (0.)
* 307 * (6,17) (0.15)
* 308 * (18,24) (0.) ..
* 309 *
* 310 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 311 *
* 312 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 313 *
* 314 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 315 *
* 316 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 317 *
* 318 * COOL_W =WEEK-SCHEDULE (ALL) COOL_D ..
* 319 *
* 320 * COOL_80_W =WEEK-SCHEDULE (ALL) COOL_80_D ..
* 321 *
* 322 * MAU_ON_W =WEEK-SCHEDULE (WD) MAU_ON_D
* 323 * (WEH) FULL_OFF_D ..
* 324 *
* 325 * FAN_WS_B1_W =WEEK-SCHEDULE (MON) FAN_WSBA_D
* 326 * (TUE) FAN_WSBA_D
* 327 * (WED) FAN_WSBA_D
* 328 * (THU) FAN_WSBA_D
* 329 * (FRI) FAN_WSBB_D
* 330 * (SAT) FULL_OFF_D
* 331 * (SUN) FULL_OFF_D
* 332 * (HOL) FAN_WSBA_D ..
* 333 *
* 334 * FAN_WS_B2_W =WEEK-SCHEDULE (MON) FAN_WSBC_D
* 335 * (TUE) FAN_WSBC_D
* 336 * (WED) FAN_WSBC_D
* 337 * (THU) FAN_WSBC_D
* 338 * (FRI) FAN_WSBB_D
* 339 * (SAT) FULL_OFF_D
* 340 * (SUN) FULL_OFF_D
* 341 * (HOL) FAN_WSBC_D ..
* 342 *
* 343 * FAN_WS_B3_W =WEEK-SCHEDULE (ALL) FAN_WSBB_D ..
* 344 *
* 345 * HT55WS_B1_W =WEEK-SCHEDULE (MON) HT55WSBA_D
* 346 * (TUE) HT55WSBA_D
* 347 * (WED) HT55WSBA_D
* 348 * (THU) HT55WSBA_D
* 349 * (FRI) HT55WSBB_D
* 350 * (SAT) HEAT_50_D
* 351 * (SUN) HEAT_50_D
* 352 * (HOL) HT55WSBA_D ..

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* 353 *
* 354 * HT55WSB2_W =WEEK-SCHEDULE (MON) HT55WSBC_D
* 355 * (TUE) HT55WSBC_D
* 356 * (WED) HT55WSBC_D
* 357 * (THU) HT55WSBC_D
* 358 * (FRI) HT55WSBB_D
* 359 * (SAT) HEAT_50_D
* 360 * (SUN) HEAT_50_D
* 361 * (HOL) HT55WSBC_D ..
* 362 *
* 363 * HT68_WSB_W =WEEK-SCHEDULE (ALL) HT68_WSB_D ..
* 364 *
* 365 * MOA.15_W =WEEK-SCHEDULE (ALL) MOA.15_D ..
* 366 *
* 367 *
* 368 * $ FULL ON SCHEDULE
* 369 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 370 *
* 371 * $ FULL OFF SCHEDULE
* 372 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 373 *
* 374 * $ HEAT SCHEDULE, 55 DEG
* 375 * HEAT55_ON =SCHEDULE THRU MAY 15 HEAT1_ON_W
* 376 * THRU OCT 1 FULL_OFF_W
* 377 * THRU DEC 31 HEAT1_ON_W ..
* 378 *
* 379 * $ HEAT SCHEDULE 68 DEG
* 380 * HEAT68_ON =SCHEDULE THRU MAY 15 HEAT2_ON_W
* 381 * THRU OCT 1 FULL_OFF_W
* 382 * THRU DEC 31 HEAT2_ON_W ..
* 383 *
* 384 * $ COOLING SCHEDULE
* 385 * COOL_SCHED =SCHEDULE THRU MAY 15 FULL_OFF_W
* 386 * THRU OCT 1 COOL_W
* 387 * THRU DEC 31 FULL_OFF_W ..
* 388 *
* 389 * $ COOL SCHED 80 DEH
* 390 * COOL_80 =SCHEDULE THRU MAY 15 FULL_OFF_W
* 391 * THRU OCT 1 COOL_80_W
* 392 * THRU DEC 31 FULL_OFF_W ..
* 393 *
* 394 * $ MAU SCHEDULE
* 395 * MAU_ON =SCHEDULE THRU MAY 15 MAU_ON_W
* 396 * THRU OCT 1 FULL_OFF_W
* 397 * THRU DEC 31 MAU_ON_W ..
* 398 *
* 399 * $ HV_1 ON SCHEDULE
* 400 * HV_1_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 401 *
* 402 * $ HANGAR FAN SB, WINTER
* 403 * FAN_WSB1 =SCHEDULE THRU MAY 15 FAN_WSB2_W
* 404 * THRU OCT 1 FULL_OFF_W
* 405 * THRU DEC 31 FAN_WSB2_W ..
* 406 *
* 407 * $ OPERATIONS FAN SET BACK
* 408 * FAN_WSB_2 =SCHEDULE THRU DEC 31 FAN_WSB3_W ..
* 409 *
* 410 * $ HANGER HEAT SET BACK
* 411 * HEAT_WSB_1 =SCHEDULE THRU DEC 31 HT55WSB1_W ..
* 412 *
* 413 * $ OPERATIONS HEAT W SB
* 414 * HT68_WSB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 415 *
* 416 * $ FORCED VENTILATION
* 417 * MOA.15_FV =SCHEDULE THRU DEC 31 MOA.15_W ..
* 418 *
* 419 *
* 420 *
* 421 * $ ZONE DESCRIPTION
* 422 *
* 423 * BAY_A =ZONE DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 424 * HEAT-TEMP-SCH = HEAT_WSB_1 ZONE-TYPE = CONDITIONED
* 425 * THERMOSTAT-TYPE = PROPORTIONAL
* 426 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 198000.
* 427 * SIZING-OPTION = FROM-LOADS MIN-CFM-RATIO = 1.0
* 428 * EXHAUST-STATIC = 0.75 ..
* 429 *
* 430 * BAY_B =ZONE DESIGN-HEAT-T = 57.0 DESIGN-COOL-T = 90.0
* 431 * HEAT-TEMP-SCH = HEAT_WSB_1 ZONE-TYPE = CONDITIONED
* 432 * THERMOSTAT-TYPE = PROPORTIONAL
* 433 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 55920.
* 434 * OUTSIDE-AIR-CFM = 55920. SIZING-OPTION = FROM-LOADS
* 435 * MIN-CFM-RATIO = 1.0 EXHAUST-STATIC = 0.75 ..
* 436 *
* 437 * ADMIN_C =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 438 * HEAT-TEMP-SCH = HT68_WSB ZONE-TYPE = CONDITIONED
* 439 * THERMOSTAT-TYPE = PROPORTIONAL
* 440 * BASEBOARD-CTRL = THERMOSTATIC
* 441 * BASEBOARD-RATING = -129500. ASSIGNED-CFM = 19600.
* 442 * OUTSIDE-AIR-CFM = 2940. SIZING-OPTION = FROM-LOADS
* 443 * EXHAUST-CFM = 2940.0 ..
* 444 *
* 445 *
* 446 * $ SYSTEM DESCRIPTION
* 447 *
* 448 * DUH =SYSTEM SYSTEM-TYPE = UHT
* 449 * MAX-SUPPLY-T = 135.0 RATED-CFM = 198000.
* 450 * FAN-SCHEDULE = FAN_WSB1 SUPPLY-DELTA-T = 0.2
* 451 * SUPPLY-KW = 0.00014 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 452 * HEATING-CAPACITY = -6739200. FURNACE-AUX = 0.
* 453 * ZONE-NAMES = (BAY_A) ..
* 454 *
* 455 * RMAU =SYSTEM SYSTEM-TYPE = SZRH
* 456 * MAX-SUPPLY-T = 135.0 MIN-SUPPLY-T = 55.0
* 457 * HEATING-SCHEDULE = MAU_ON PREHEAT-T = 15.0
* 458 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 459 * ECONO-LOW-LIMIT = 55.0 OA-CONTROL = FIXED
* 460 * SUPPLY-CFM = 55920. RATED-CFM = 55920.

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* 461 *      MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.37
* 462 *      FAN-SCHEDULE = MAU_ON SUPPLY-DELTA-T = 2.4
* 463 *      SUPPLY-KW = 0.00112 NIGHT-CYCLE-CTRL = STAY-OFF
* 464 *      NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
* 465 *      COOL-FI-MIN = 0. HEATING-CAPACITY = -2536800.
* 466 *      FURNACE-AUX = 0.
* 467 *      ZONE-NAMES = (BAY_B) ..
* 468 *
* 469 * HV-1      =SYSTEM SYSTEM-TYPE = HVSYS
* 470 *      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HV_1_ON
* 471 *      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 472 *      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 473 *      SUPPLY-CFM = 19600. RETURN-CFM = 16660.
* 474 *      RATED-CFM = 19600. MIN-OUTSIDE-AIR = 0.15
* 475 *      MIN-AIR-SCH = MOA.15_FV FAN-SCHEDULE = FAN_WSB_2
* 476 *      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00119
* 477 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 478 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 479 *      HEATING-CAPACITY = -243400. FURNACE-AUX = 0.
* 480 *      ZONE-NAMES = (ADMIN_C) ..
* 481 *
* 482 * END ..
* 483 * COMPUTE SYSTEMS ..
* 484 *
* 485 * INPUT PLANT ..

```

PDL PROCESSOR INPUT DATA

4/ 5/1995 13:38:48 PDL RUN 1

```

* 486 *
* 487 *
* 488 *
* 489 *      $-----$
* 490 *      $ E Z - D O E   P L A N T S   I N P U T $
* 491 *      $-----$
* 492 *
* 493 *      $ GENERAL PROJECT DATA
* 494 *
* 494 * TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 495 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 496 *      LINE-3 *      DENVER,      CO      80227      *
* 497 *
* 498 *      LINE-4 *BUILDING 2060, MNT. HANGAR AVUM      *
* 499 *      LINE-5 *SETBACK, DDC, & FORCED VENTILATION * ..
* 500 *
* 501 * ABORT      ERRORS ..
* 502 * DIAGNOSTIC  WARNINGS ..
* 503 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 504 *
* 505 *      HOURLY-DATA-SAVE = YES ..
* 506 *
* 507 *      $ SCHEDULES
* 508 *
* 509 *
* 510 *
* 511 *
* 512 *
* 513 *
* 514 *      $ EQUIPMENT DESCRIPTION
* 515 * BOILER      =PLANT-EQUIPMENT TYPE = HW-BOILER
* 516 *      SIZE = 8.4 ..
* 517 *
* 518 * ACC8      =PLANT-EQUIPMENT TYPE = OPEN-CENT-CHLR
* 519 *      SIZE = 0.1 ..
* 520 *
* 521 * DHW      =PLANT-EQUIPMENT TYPE = HW-BOILER
* 522 *      SIZE = 0.6 ..
* 523 *
* 524 * PLANT-PARAMETERS OPEN-CENT-COND-TYPE = AIR CCIRC-HEAD = 63.2
* 525 *      HCIRC-HEAD = 100.0 ..
* 526 *
* 527 *
* 528 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 529 * ENERGY-RESOURCE RESOURCE = FUEL-OIL ..
* 530 *
* 531 *
* 532 *
* 533 * END ..
* 534 * COMPUTE PLANT ..
* 535 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	263.27	5,901.54	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	848.81	0.00	0.00
DOM HOT WTR	26.10	546.71	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	397.03	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	259.56	0.00	0.00
	-----	-----	-----
TOTAL	1,794.79	6,448.25	0.00

TOTAL SITE ENERGY 8243.02 MBTU 170.4 KBTU/SQFT-YR GROSS-AREA 170.4 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 11837.96 MBTU 244.7 KBTU/SQFT-YR GROSS-AREA 244.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 1.4  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	214.385	1582.559
JAN	PEAK (KBTU)	786.427	8521.037
	DY/HR	5/14	24/ 5
	TOTAL (MBTU)	186.968	1077.526
FEB	PEAK (KBTU)	775.901	7516.637
	DY/HR	14/14	14/ 5
	TOTAL (MBTU)	204.015	1051.163
MAR	PEAK (KBTU)	772.375	7005.229
	DY/HR	3/14	28/ 5
	TOTAL (MBTU)	157.072	374.452
APR	PEAK (KBTU)	722.670	6355.310
	DY/HR	1/10	4/ 5
	TOTAL (MBTU)	122.994	131.485
MAY	PEAK (KBTU)	671.681	3502.395
	DY/HR	2/14	3/ 6
	TOTAL (MBTU)	93.653	54.507
JUN	PEAK (KBTU)	365.903	425.307
	DY/HR	20/14	20/12
	TOTAL (MBTU)	92.090	50.236
JUL	PEAK (KBTU)	365.903	408.914
	DY/HR	28/14	28/12
	TOTAL (MBTU)	97.033	56.190
AUG	PEAK (KBTU)	365.903	427.267
	DY/HR	30/14	30/12
	TOTAL (MBTU)	97.595	66.775
SEP	PEAK (KBTU)	365.903	428.257
	DY/HR	28/14	15/12
	TOTAL (MBTU)	150.915	255.956
OCT	PEAK (KBTU)	702.720	4381.661
	DY/HR	26/13	31/ 6
	TOTAL (MBTU)	177.459	639.707
NOV	PEAK (KBTU)	763.903	6800.820
	DY/HR	28/14	28/ 6
	TOTAL (MBTU)	200.593	1107.701
DEC	PEAK (KBTU)	773.112	7521.751
	DY/HR	30/14	26/ 6
	ONE YEAR	1794.772	6448.254
	USE/PEAK	786.427	8521.037

**COMPUTER SIMULATIONS**

BUILDING 2065



**COMPUTER SIMULATIONS**  
**BUILDING 2065**

**BASE RUN**

# LDL PROCESSOR INPUT DATA

3/19/1995 11:52:15 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 2065, AF OPS *
* 16 * LINE-5 *BASE MODEL *..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D) ..
* 21 * BUILDING-LOCATION X-REF = 0.0
* 22 * Y-REF = 0.0 ..
* 23 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 24 *
* 25 *
* 26 *      $ SCHEDULES
* 27 *
* 28 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 29 *
* 30 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 31 *
* 32 * PEOPLE_D =DAY-SCHEDULE (1,6) (0.1)
* 33 *      (7) (0.5)
* 34 *      (8,11) (0.8)
* 35 *      (12,16) (0.7,0.6,0.9,0.6,0.5)
* 36 *      (17,18) (0.4,0.3)
* 37 *      (19,24) (0.1) ..
* 38 *
* 39 * PEOPLE_SAT =DAY-SCHEDULE (1,24) (0.1) ..
* 40 *
* 41 * LIGHT_D =DAY-SCHEDULE (1,7) (0.2)
* 42 *      (8,12) (0.4,0.5,0.6,0.7,0.3)
* 43 *      (13,15) (0.7,0.6,0.45)
* 44 *      (16,24) (0.2) ..
* 45 *

```

\* 46 \* LIGHT\_SAT =DAY-SCHEDULE (1,24) (0.2) ..  
 \* 47 \*  
 \* 48 \*  
 \* 49 \* PEOPLE\_W =WEEK-SCHEDULE (WD) PEOPLE\_D  
 \* 50 \*                   (WEH) PEOPLE\_SAT ..  
 \* 51 \*  
 \* 52 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 53 \*  
 \* 54 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 55 \*  
 \* 56 \* LIGHT\_ON\_W =WEEK-SCHEDULE (WD) LIGHT\_D  
 \* 57 \*                   (WEH) LIGHT\_SAT ..  
 \* 58 \*  
 \* 59 \*  
 \* 60 \* \$ FULL ON SCHEDULE  
 \* 61 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 62 \*  
 \* 63 \* \$ FULL OFF SCHEDULE  
 \* 64 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 65 \*  
 \* 66 \* \$ OCCUPANCY SCHEDULE  
 \* 67 \* PEOPLE\_SCD =SCHEDULE THRU DEC 31 PEOPLE\_W ..  
 \* 68 \*  
 \* 69 \* \$ LIGHTING SCHEDULE  
 \* 70 \* LIGHT\_SCHD =SCHEDULE THRU DEC 31 LIGHT\_ON\_W ..  
 \* 71 \*  
 \* 72 \*  
 \* 73 \*  
 \* 74 \*               \$ CONSTRUCTION TYPES  
 \* 75 \*  
 \* 76 \*  
 \* 77 \*  
 \* 78 \* FLOORCON =CONSTRUCTION U-VALUE = 0.100 ..  
 \* 79 \* ROOF\_CON =CONSTRUCTION U-VALUE = 0.050 ..  
 \* 80 \* WALL\_CON =CONSTRUCTION U-VALUE = 0.200 ..  
 \* 81 \* DOOR\_CON =CONSTRUCTION U-VALUE = 0.400 ..  
 \* 82 \* AIRWALL =CONSTRUCTION U-VALUE = 20.000 ..  
 \* 83 \*  
 \* 84 \* G\_TYPE1 =GLASS-TYPE GLASS-TYPE-CODE = 1  
 \* 85 \*               PANES = 1  
 \* 86 \*               GLASS-CONDUCTANCE = 1.130 ..  
 \* 87 \*  
 \* 88 \*  
 \* 89 \*  
 \* 90 \*  
 \* 91 \*               \$ SPACE DESCRIPTION  
 \* 92 \*  
 \* 93 \* ADMIN =SPACE AREA = 4322.0 VOLUME = 38898.0  
 \* 94 \*               ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCD  
 \* 95 \*               NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 550.0

\* 96 \*           LIGHTING-TYPE = REC-FLUOR-RV   LIGHTING-KW = 2.44  
 \* 97 \*           LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 98 \*           EQUIP-SCHEDULE = FULL\_ON   EQUIPMENT-KW = 2.0  
 \* 99 \*           INF-METHOD = AIR-CHANGE   AIR-CHANGES/HR = 0.5  
 \* 100 \*          INF-SCHEDULE = FULL\_ON ..  
 \* 101 \*  
 \* 102 \*       U-W   HEIGHT = 67.0   WIDTH = 64.5   CONS = FLOORCON  
 \* 103 \*           AZIMUTH = 270 ..  
 \* 104 \*  
 \* 105 \*       ROOF   HEIGHT = 67.0   WIDTH = 64.5   CONS = ROOF\_CON  
 \* 106 \*           AZIMUTH = 270   TILT = 0 ..  
 \* 107 \*  
 \* 108 \*       E-W   HEIGHT = 9.0   WIDTH = 67.0   CONS = WALL\_CON  
 \* 109 \*           AZIMUTH = 0 ..  
 \* 110 \*  
 \* 111 \*       WINDOW HEIGHT = 4.0   WIDTH = 4.0   G-T = G\_TYPE1  
 \* 112 \*           MULTIPLIER = 4.0 ..  
 \* 113 \*  
 \* 114 \*       DOOR   HEIGHT = 7.5   WIDTH = 3.0   CONS = DOOR\_CON ..  
 \* 115 \*  
 \* 116 \*       E-W   HEIGHT = 9.0   WIDTH = 70.0   CONS = WALL\_CON  
 \* 117 \*           AZIMUTH = 90 ..  
 \* 118 \*  
 \* 119 \*       WINDOW HEIGHT = 4.0   WIDTH = 6.0   G-T = G\_TYPE1  
 \* 120 \*           MULTIPLIER = 2.0 ..  
 \* 121 \*  
 \* 122 \*       E-W   HEIGHT = 9.0   WIDTH = 59.0   CONS = WALL\_CON  
 \* 123 \*           AZIMUTH = 270 ..  
 \* 124 \*  
 \* 125 \*       WINDOW HEIGHT = 4.0   WIDTH = 14.0   G-T = G\_TYPE1 ..  
 \* 126 \*  
 \* 127 \*       WINDOW HEIGHT = 4.0   WIDTH = 4.0   G-T = G\_TYPE1  
 \* 128 \*           MULTIPLIER = 3.0 ..  
 \* 129 \*  
 \* 130 \*  
 \* 131 \*   24HR\_OPS\_A = SPACE   AREA = 7652.0   VOLUME = 68868.0  
 \* 132 \*       ZONE-TYPE = CONDITIONED   PEOPLE-SCHEDULE = PEOPLE\_SCD  
 \* 133 \*       NUMBER-OF-PEOPLE = 60.0   PEOPLE-HEAT-GAIN = 550.0  
 \* 134 \*       LIGHTING-TYPE = REC-FLUOR-RV   LIGHTING-KW = 6.56  
 \* 135 \*       LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 136 \*       EQUIP-SCHEDULE = FULL\_ON   EQUIPMENT-KW = 5.0  
 \* 137 \*       INF-METHOD = AIR-CHANGE   AIR-CHANGES/HR = 0.5  
 \* 138 \*       INF-SCHEDULE = FULL\_ON ..  
 \* 139 \*  
 \* 140 \*       U-W   HEIGHT = 78.7   WIDTH = 148.0   CONS = FLOORCON  
 \* 141 \*           AZIMUTH = 270 ..  
 \* 142 \*  
 \* 143 \*       ROOF   HEIGHT = 78.7   WIDTH = 148.0   CONS = ROOF\_CON  
 \* 144 \*           AZIMUTH = 270   TILT = 0 ..  
 \* 145 \*

\* 146 \* E-W HEIGHT = 9.0 WIDTH = 148.0 CONS = WALL\_CON  
 \* 147 \* AZIMUTH = 90 ..  
 \* 148 \*  
 \* 149 \* WINDOW HEIGHT = 4.0 WIDTH = 10.0 G-T = G\_TYPE1  
 \* 150 \* MULTIPLIER = 2.0 ..  
 \* 151 \*  
 \* 152 \* WINDOW HEIGHT = 4.0 WIDTH = 24.0 G-T = G\_TYPE1 ..  
 \* 153 \*  
 \* 154 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = FLOORCON ..  
 \* 155 \*  
 \* 156 \* E-W HEIGHT = 9.0 WIDTH = 51.0 CONS = WALL\_CON  
 \* 157 \* AZIMUTH = 180 ..  
 \* 158 \*  
 \* 159 \* WINDOW HEIGHT = 4.0 WIDTH = 8.0 G-T = G\_TYPE1 ..  
 \* 160 \*  
 \* 161 \* E-W HEIGHT = 9.0 WIDTH = 160.0 CONS = WALL\_CON  
 \* 162 \* AZIMUTH = 270 ..  
 \* 163 \*  
 \* 164 \* WINDOW HEIGHT = 4.0 WIDTH = 4.0 G-T = G\_TYPE1  
 \* 165 \* MULTIPLIER = 4.0 ..  
 \* 166 \*  
 \* 167 \* WINDOW HEIGHT = 14.0 WIDTH = 4.0 G-T = G\_TYPE1 ..  
 \* 168 \*  
 \* 169 \* WINDOW HEIGHT = 8.0 WIDTH = 4.0 G-T = G\_TYPE1 ..  
 \* 170 \*  
 \* 171 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOOR\_CON  
 \* 172 \* MULTIPLIER = 2.0 ..  
 \* 173 \*  
 \* 174 \* E-W HEIGHT = 9.0 WIDTH = 60.0 CONS = WALL\_CON  
 \* 175 \* AZIMUTH = 0 ..  
 \* 176 \*  
 \* 177 \* WINDOW HEIGHT = 4.0 WIDTH = 4.0 G-T = G\_TYPE1  
 \* 178 \* MULTIPLIER = 2.0 ..  
 \* 179 \*  
 \* 180 \*  
 \* 181 \* FIREHOUSE =SPACE AREA = 5928.0 VOLUME = 59280.0  
 \* 182 \* ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCD  
 \* 183 \* NUMBER-OF-PEOPLE = 25.0 PEOPLE-HEAT-GAIN = 550.0  
 \* 184 \* LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 3.0  
 \* 185 \* LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 186 \* EQUIP-SCHEDULE = FULL\_ON EQUIPMENT-KW = 1.0  
 \* 187 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 188 \* INF-SCHEDULE = FULL\_ON ..  
 \* 189 \*  
 \* 190 \* U-W HEIGHT = 78.0 WIDTH = 75.0 CONS = FLOORCON  
 \* 191 \* AZIMUTH = 270 ..  
 \* 192 \*  
 \* 193 \* ROOF HEIGHT = 78.0 WIDTH = 75.0 CONS = ROOF\_CON  
 \* 194 \* AZIMUTH = 270 TILT = 0 ..  
 \* 195 \*

\* 196 \* E-W HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL\_CON  
 \* 197 \* AZIMUTH = 0 ..  
 \* 198 \*  
 \* 199 \* E-W HEIGHT = 9.0 WIDTH = 76.0 CONS = WALL\_CON  
 \* 200 \* AZIMUTH = 90 ..  
 \* 201 \*  
 \* 202 \* WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G\_TYPE1  
 \* 203 \* MULTIPLIER = 5.0 ..  
 \* 204 \*  
 \* 205 \* WINDOW HEIGHT = 4.0 WIDTH = 5.0 G-T = G\_TYPE1 ..  
 \* 206 \*  
 \* 207 \* E-W HEIGHT = 9.0 WIDTH = 78.0 CONS = WALL\_CON  
 \* 208 \* AZIMUTH = 180 ..  
 \* 209 \*  
 \* 210 \* E-W HEIGHT = 9.0 WIDTH = 76.0 CONS = WALL\_CON  
 \* 211 \* AZIMUTH = 270 ..  
 \* 212 \*  
 \* 213 \* DOOR HEIGHT = 8.0 WIDTH = 12.0 CONS = DOOR\_CON  
 \* 214 \* MULTIPLIER = 4.0 ..  
 \* 215 \*  
 \* 216 \*  
 \* 217 \* TOWER =SPACE AREA = 1728.0 VOLUME = 15552.0  
 \* 218 \* ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = FULL\_ON  
 \* 219 \* NUMBER-OF-PEOPLE = 5.0 PEOPLE-HEAT-GAIN = 550.0  
 \* 220 \* LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 0.5  
 \* 221 \* LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 222 \* EQUIP-SCHEDULE = FULL\_ON EQUIPMENT-KW = 12.0  
 \* 223 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 224 \* INF-SCHEDULE = FULL\_ON ..  
 \* 225 \*  
 \* 226 \* U-W HEIGHT = 42.0 WIDTH = 42.0 CONS = FLOORCON  
 \* 227 \* AZIMUTH = 270 ..  
 \* 228 \*  
 \* 229 \* ROOF HEIGHT = 42.0 WIDTH = 42.0 CONS = ROOF\_CON  
 \* 230 \* AZIMUTH = 270 TILT = 0 ..  
 \* 231 \*  
 \* 232 \* E-W HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL\_CON  
 \* 233 \* AZIMUTH = 30 ..  
 \* 234 \*  
 \* 235 \* WINDOW HEIGHT = 5.0 WIDTH = 20.0 G-T = G\_TYPE1 ..  
 \* 236 \*  
 \* 237 \* E-W HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL\_CON  
 \* 238 \* AZIMUTH = 90 ..  
 \* 239 \*  
 \* 240 \* WINDOW HEIGHT = 5.0 WIDTH = 20.0 G-T = G\_TYPE1 ..  
 \* 241 \*  
 \* 242 \* E-W HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL\_CON  
 \* 243 \* AZIMUTH = 150 ..  
 \* 244 \*  
 \* 245 \* WINDOW HEIGHT = 5.0 WIDTH = 20.0 G-T = G\_TYPE1 ..

```

* 246 *
* 247 *      E-W   HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL_CON
* 248 *      AZIMUTH = 210  ..
* 249 *
* 250 *      WINDOW HEIGHT = 5.0 WIDTH = 20.0 G-T = G_TYPE1 ..
* 251 *
* 252 *      E-W   HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL_CON
* 253 *      AZIMUTH = 270  ..
* 254 *
* 255 *      WINDOW HEIGHT = 5.0 WIDTH = 20.0 G-T = G_TYPE1 ..
* 256 *
* 257 *      E-W   HEIGHT = 9.0 WIDTH = 20.0 CONS = WALL_CON
* 258 *      AZIMUTH = 330  ..
* 259 *
* 260 *      WINDOW HEIGHT = 5.0 WIDTH = 20.0 G-T = G_TYPE1 ..
* 261 *
* 262 *
* 263 * 24HR_OPS_B =SPACE   AREA = 4000.0 VOLUME = 36000.0
* 264 *      ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCD
* 265 *      NUMBER-OF-PEOPLE = 40.0 PEOPLE-HEAT-GAIN = 550.0
* 266 *      EQUIP-SCHEDULE = FULL_ON EQUIPMENT-KW = 15.0
* 267 *      FLOOR-WEIGHT = 0.1 INF-METHOD = AIR-CHANGE
* 268 *      AIR-CHANGES/HR = 0.5 INF-SCHEDULE = FULL_ON  ..
* 269 *
* 270 *      I-W   HEIGHT = 9.0 WIDTH = 145.0 CONS = AIRWALL
* 271 *      NEXT-TO = 24HR_OPS_A  ..
* 272 *
* 273 *
* 274 * END  ..
* 275 * COMPUTE LOADS  ..
* 276 *
* 277 * INPUT SYSTEMS  ..

```

# SDL PROCESSOR INPUT DATA

3/19/1995 11:52:15 SDL RUN 1

```

* 278 *
* 279 *
* 280 *      $-----$
* 281 *      $EZ-DOE SYSTEMS INPUT$
* 282 *      $-----$
* 283 *
* 284 *      $ GENERAL PROJECT DATA
* 285 *
* 286 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 287 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*

```

\* 288 \*    LINE-3 \*    DENVER,    CO    80227    \*  
 \* 289 \*  
 \* 290 \*    LINE-4 \* BUILDING 2065, AF OPS    \*  
 \* 291 \*    LINE-5 \* BASE MODEL    \*..  
 \* 292 \* ABORT            ERRORS ..  
 \* 293 \* DIAGNOSTIC       WARNINGS..  
 \* 294 \* SYSTEMS-REPORT   SUMMARY=(SS-A,SS-B,SS-C,SS-F,SS-H,SS-K,SS-O) ..  
 \* 295 \*  
 \* 296 \*                \$ SCHEDULES  
 \* 297 \*  
 \* 298 \* FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 299 \* FULL\_OFF\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 300 \* HEAT\_68\_D =DAY-SCHEDULE (1,24) (73.) ..  
 \* 301 \* COOL\_75\_D =DAY-SCHEDULE (1,24) (75.) ..  
 \* 302 \* COOL\_78\_D =DAY-SCHEDULE (1,24) (78.) ..  
 \* 303 \* HT\_AVAIL\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 304 \*  
 \* 305 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 306 \*  
 \* 307 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 308 \*  
 \* 309 \* HEAT\_68\_W =WEEK-SCHEDULE (ALL) HEAT\_68\_D ..  
 \* 310 \*  
 \* 311 \* COOL\_75\_W =WEEK-SCHEDULE (ALL) COOL\_75\_D ..  
 \* 312 \*  
 \* 313 \* COOL\_78\_W =WEEK-SCHEDULE (ALL) COOL\_78\_D ..  
 \* 314 \*  
 \* 315 \* HT\_AVAIL\_W =WEEK-SCHEDULE (ALL) HT\_AVAIL\_D ..  
 \* 316 \*  
 \* 317 \*  
 \* 318 \* \$ FULL\_ON SCHEDULE  
 \* 319 \* FULL\_ON    =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 320 \*  
 \* 321 \* \$ FULL OFF SCHEDULE  
 \* 322 \* FULL\_OFF    =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 323 \*  
 \* 324 \* \$ HEATING SCHEDULE  
 \* 325 \* HEAT\_68    =SCHEDULE THRU DEC 31 HEAT\_68\_W ..  
 \* 326 \*  
 \* 327 \* COOL\_75\_Y =SCHEDULE THRU DEC 31 COOL\_75\_W ..  
 \* 328 \*  
 \* 329 \* COOL\_78\_Y =SCHEDULE THRU DEC 31 COOL\_78\_W ..  
 \* 330 \*  
 \* 331 \* \$ MONTHS HEAT IS AVAIL.  
 \* 332 \* HEAT\_AVAIL =SCHEDULE THRU MAY 31 HT\_AVAIL\_W  
 \* 333 \*                THRU SEP 15 FULL\_OFF\_W  
 \* 334 \*                THRU DEC 31 HT\_AVAIL\_W ..  
 \* 335 \*  
 \* 336 \*  
 \* 337 \*



\* 338 \*       \$ ZONE DESCRIPTION  
 \* 339 \*  
 \* 340 \* ADMIN   =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 341 \*       HEAT-TEMP-SCH = HEAT\_68 ZONE-TYPE = CONDITIONED  
 \* 342 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 343 \*       BASEBOARD-CTRL = THERMOSTATIC  
 \* 344 \*       BASEBOARD-RATING = -95079. ASSIGNED-CFM = 5250.  
 \* 345 \*       OUTSIDE-AIR-CFM = 420. SIZING-OPTION = FROM-LOADS ..  
 \* 346 \*  
 \* 347 \* 24HR\_OPS\_A =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 348 \*       HEAT-TEMP-SCH = HEAT\_68 ZONE-TYPE = CONDITIONED  
 \* 349 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 350 \*       BASEBOARD-CTRL = THERMOSTATIC  
 \* 351 \*       BASEBOARD-RATING = -158366. ASSIGNED-CFM = 9660.  
 \* 352 \*       OUTSIDE-AIR-CFM = 4637. SIZING-OPTION = FROM-LOADS ..  
 \* 353 \*  
 \* 354 \* FIREHOUSE =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 355 \*       HEAT-TEMP-SCH = HEAT\_68 COOL-TEMP-SCH = COOL\_75\_Y  
 \* 356 \*       ZONE-TYPE = CONDITIONED  
 \* 357 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 358 \*       BASEBOARD-CTRL = THERMOSTATIC  
 \* 359 \*       BASEBOARD-RATING = -117900. ASSIGNED-CFM = 6840.  
 \* 360 \*       OUTSIDE-AIR-CFM = 4172. SIZING-OPTION = FROM-LOADS ..  
 \* 361 \*  
 \* 362 \* TOWER    =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 78.0  
 \* 363 \*       HEAT-TEMP-SCH = HEAT\_68 COOL-TEMP-SCH = COOL\_78\_Y  
 \* 364 \*       ZONE-TYPE = CONDITIONED  
 \* 365 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 366 \*       BASEBOARD-CTRL = THERMOSTATIC  
 \* 367 \*       BASEBOARD-RATING = -2119. ASSIGNED-CFM = 2415.  
 \* 368 \*       SIZING-OPTION = FROM-LOADS ..  
 \* 369 \*  
 \* 370 \* 24HR\_OPS\_B =ZONE   DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 371 \*       COOL-TEMP-SCH = COOL\_75\_Y ZONE-TYPE = CONDITIONED  
 \* 372 \*       THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0  
 \* 373 \*       BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 8200.  
 \* 374 \*       SIZING-OPTION = FROM-LOADS ..  
 \* 375 \*  
 \* 376 \*  
 \* 377 \*       \$ SYSTEM DESCRIPTION  
 \* 378 \*  
 \* 379 \* HV\_3    =SYSTEM   SYSTEM-TYPE = HVSYS  
 \* 380 \*       MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT\_AVAIL  
 \* 381 \*       MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 382 \*       ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 383 \*       SUPPLY-CFM = 5250. RETURN-CFM = 4830.  
 \* 384 \*       RATED-CFM = 5250. MIN-OUTSIDE-AIR = 0.08  
 \* 385 \*       SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 386 \*       NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 387 \*       HEATING-CAPACITY = -56900. FURNACE-AUX = 0.

```

* 388 *           ZONE-NAMES = (ADMIN) ..
* 389 *
* 390 * HV_1&2&MU1 =SYSTEM  SYSTEM-TYPE = HVSYS
* 391 *           MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_AVAIL
* 392 *           MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 393 *           ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 394 *           SUPPLY-CFM = 9660. RETURN-CFM = 5023.
* 395 *           RATED-CFM = 9660. MIN-OUTSIDE-AIR = 0.48
* 396 *           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 397 *           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 398 *           HEATING-CAPACITY = -466800. FURNACE-AUX = 0.
* 399 *           ZONE-NAMES = (24HR_OPS_A) ..
* 400 *
* 401 * HV_4&MU2 =SYSTEM  SYSTEM-TYPE = HVSYS
* 402 *           MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_AVAIL
* 403 *           MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 404 *           ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 405 *           SUPPLY-CFM = 6840. RETURN-CFM = 2668.
* 406 *           RATED-CFM = 6840. MIN-OUTSIDE-AIR = 0.61
* 407 *           SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 408 *           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 409 *           HEATING-CAPACITY = -360300. FURNACE-AUX = 0.
* 410 *           ZONE-NAMES = (FIREHOUSE) ..
* 411 *
* 412 * AC1-7  =SYSTEM  SYSTEM-TYPE = PTAC
* 413 *           MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 414 *           HEATING-SCHEDULE = FULL_OFF SUPPLY-CFM = 8200.
* 415 *           RATED-CFM = 8200. FAN-CONTROL = CONSTANT-VOLUME
* 416 *           SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 417 *           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 418 *           COOLING-CAPACITY = 178000. COOL-SH-CAP = 160500.
* 419 *           COOL-FT-MIN = 0. MIN-HP-T = 0.
* 420 *           HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 421 *           ZONE-NAMES = (24HR_OPS_B) ..
* 422 *
* 423 * AC9    =SYSTEM  SYSTEM-TYPE = PTAC
* 424 *           MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 425 *           HEATING-SCHEDULE = FULL_OFF SUPPLY-CFM = 2415.
* 426 *           RATED-CFM = 2415. FAN-CONTROL = CONSTANT-VOLUME
* 427 *           SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 428 *           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 429 *           COOLING-CAPACITY = 64300. COOL-SH-CAP = 48900.
* 430 *           COOL-FT-MIN = 0. MIN-HP-T = 0.
* 431 *           HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 432 *           ZONE-NAMES = (TOWER) ..
* 433 *
* 434 * END ..
* 435 * COMPUTE SYSTEMS ..
* 436 *
* 437 * INPUT PLANT ..

```

# PDL PROCESSOR INPUT DATA

3/19/1995 11:52:15 PDL RUN 1

```

* 438 *
* 439 *
* 440 *      $-----$
* 441 *      $EZ-DOE PLANTS INPUT$
* 442 *      $-----$
* 443 *
* 444 *      $ GENERAL PROJECT DATA
* 445 *
* 446 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 447 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 448 * LINE-3 * DENVER, CO 80227 *
* 449 *
* 450 * LINE-4 *BUILDING 2065, AF OPS *
* 451 * LINE-5 *BASE MODEL * ..
* 452 *
* 453 * ABORT ERRORS ..
* 454 * DIAGNOSTIC WARNINGS ..
* 455 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 456 * ..
* 457 *
* 458 *      $ SCHEDULES
* 459 *
* 460 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 461 *
* 462 *
* 463 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 464 *
* 465 *
* 466 * $ FULL ON SCHEDULE
* 467 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 468 *
* 469 *
* 470 *
* 471 *      $ EQUIPMENT DESCRIPTION
* 472 *
* 473 * B1 =PLANT-EQUIPMENT TYPE = STM-BOILER
* 474 *      SIZE = 2. ..
* 475 *
* 476 * PLANT-PARAMETERS BOILER-CONTROL = STANDBY STM-BOILER-HIR = 1.25 ..
* 477 *
* 478 *
* 479 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..

```

\* 480 \* ENERGY-RESOURCE    RESOURCE = FUEL-OIL ..  
\* 481 \*  
\* 482 \* ENERGY-STORAGE    HEAT-STORE-RATE = 2.65 HEAT-SUPPLY-RATE = 2.65  
\* 483 \*                    HTANK-BASE-T = 195.0 HTANK-T-RANGE = 50.0  
\* 484 \*                    HEAT-STORE-SCH = FULL\_ON ..  
\* 485 \*  
\* 486 \*  
\* 487 \*  
\* 488 \* END ..  
\* 489 \* COMPUTE PLANT ..  
\* 490 \* STOP ..

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	249.14	5984.51
SPACE COOL	230.54	0.00
HVAC AUX	512.43	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	103.24	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	1046.30	0.00
	-----	-----
TOTAL	2141.65	5984.51

TOTAL SITE ENERGY 8126.29 MBTU 343.9 KBTU/SQFT-YR GROSS-AREA 343.9 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 12416.28 MBTU 525.4 KBTU/SQFT-YR GROSS-AREA 525.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 11.5  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY- ELECTRICITY	FUEL-OIL
JAN	TOTAL(MBTU)	185.364
	PEAK(KBTU)	1091.334
	DY/HR	2019.768
		26/13
		5/ 6
FEB	TOTAL(MBTU)	167.475
	PEAK(KBTU)	870.866
	DY/HR	1804.124
		7/11
		5/ 7
MAR	TOTAL(MBTU)	185.417
	PEAK(KBTU)	867.872
	DY/HR	1821.711
		11/11
		9/ 6
APR	TOTAL(MBTU)	178.054
	PEAK(KBTU)	522.177
	DY/HR	1395.56
		11/13
		1/ 4
MAY	TOTAL(MBTU)	178.539
	PEAK(KBTU)	306.861
	DY/HR	1114.209
		31/13
		3/ 2
JUN	TOTAL(MBTU)	171.584
	PEAK(KBTU)	96.667
	DY/HR	725.043
		17/13
		8/ 5
JUL	TOTAL(MBTU)	182.064
	PEAK(KBTU)	56.038
	DY/HR	571.738
		18/13
		25/ 5
AUG	TOTAL(MBTU)	178.572
	PEAK(KBTU)	81.119
	DY/HR	760.861
		9/14
		6/24
SEP	TOTAL(MBTU)	172.296
	PEAK(KBTU)	177.184
	DY/HR	970.388
		2/14
		24/ 6
OCT	TOTAL(MBTU)	178.662
	PEAK(KBTU)	383.213
	DY/HR	1162.638
		26/13
		21/ 6
NOV	TOTAL(MBTU)	178.357
	PEAK(KBTU)	624.278
	DY/HR	1519.746
		29/13
		27/ 7

DEC	TOTAL(MBTU)	185.394	906.904
	PEAK(KBTU)	279.713	1769.074
	DY/HR	13/13	3/10
	ONE YEAR	2141.778	5984.514
	USE/PEAK	315.76	2019.768

**COMPUTER SIMULATIONS**  
**BUILDING 2065**

**RUN 1 - SCHEDULE START/STOP AND NIGHT SETBACK**



LDL PROCESSOR INPUT DATA

3/19/1995 12: 6:22 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 *      $-----$
* 7 *      $EZ - DOE LOADS INPUT$
* 8 *      $-----$
* 9 *
* 10 *      $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 2065, AF OPS *
* 16 * LINE-5 *MODEL WITH SET BACK * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D) ..
* 21 * BUILDING-LOCATION X-REF = 0.0
* 22 * Y-REF = 0.0 ..
* 23 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 24 *
* 25 *
* 26 *      $ SCHEDULES
* 27 *
* 28 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 29 *
* 30 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 31 *
* 32 * PEOPLE_D =DAY-SCHEDULE (1,6) (0.1)
* 33 * (7) (0.5)
* 34 * (8,11) (0.8)
* 35 * (12,16) (0.7,0.6,0.9,0.6,0.5)
* 36 * (17,18) (0.4,0.3)
* 37 * (19,24) (0.1) ..
* 38 *
* 39 * PEOPLE_SAT =DAY-SCHEDULE (1,24) (0.1) ..
* 40 *
* 41 * LIGHT_D =DAY-SCHEDULE (1,7) (0.2)
* 42 * (8,12) (0.4,0.5,0.6,0.7,0.3)
* 43 * (13,15) (0.7,0.6,0.45)
* 44 * (16,24) (0.2) ..
* 45 *
* 46 * LIGHT_SAT =DAY-SCHEDULE (1,24) (0.2) ..
* 47 *
* 48 *
* 49 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 50 * (WEH) PEOPLE_SAT ..
* 51 *
* 52 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 53 *
* 54 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 55 *
* 56 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_D
* 57 * (WEH) LIGHT_SAT ..
* 58 *
* 59 *
* 60 * $ FULL ON SCHEDULE
* 61 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 62 *
* 63 * $ FULL OFF SCHEDULE
* 64 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 65 *
* 66 * $ OCCUPANCY SCHEDULE
* 67 * PEOPLE_SCD =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 68 *
* 69 * $ LIGHTING SCHEDULE
* 70 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 71 *
* 72 *
* 73 *
* 74 *      $ CONSTRUCTION TYPES
* 75 *
* 76 *
* 77 *
* 78 * FLOORCON =CONSTRUCTION U-VALUE = 0.100 ..
* 79 * ROOF_CON =CONSTRUCTION U-VALUE = 0.050 ..
* 80 * WALL_CON =CONSTRUCTION U-VALUE = 0.200 ..
* 81 * DOOR_CON =CONSTRUCTION U-VALUE = 0.400 ..
* 82 * AIRWALL =CONSTRUCTION U-VALUE = 20.000 ..
* 83 *
* 84 * G_TYPE1 =GLASS-TYPE GLASS-TYPE-CODE = 1
* 85 * PANES = 1
* 86 * GLASS-CONDUCTANCE = 1.130 ..
* 87 *
* 88 *
* 89 *
* 90 *
* 91 *
* 92 *      $ SPACE DESCRIPTION
* 93 * ADMIN =SPACE AREA = 4322.0 VOLUME = 38898.0
* 94 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCD
* 95 * NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 550.0
* 96 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.44
* 97 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 98 * EQUIP-SCHEDULE = FULL_ON EQUIPMENT-KW = 2.0
* 99 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5
* 100 * INF-SCHEDULE = FULL_ON ..
* 101 *
* 102 * U-W HEIGHT = 67.0 WIDTH = 64.5 CONS = FLOORCON

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* 103 *          AZIMUTH = 270  ..
* 104 *
* 105 *      ROOF      HEIGHT = 67.0  WIDTH = 64.5  CONS = ROOF_CON
* 106 *          AZIMUTH = 270  TILT = 0  ..
* 107 *
* 108 *      E-W      HEIGHT = 9.0  WIDTH = 67.0  CONS = WALL_CON
* 109 *          AZIMUTH = 0  ..
* 110 *
* 111 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 112 *          MULTIPLIER = 4.0  ..
* 113 *
* 114 *          DOOR   HEIGHT = 7.5  WIDTH = 3.0  CONS = DOOR_CON ..
* 115 *
* 116 *      E-W      HEIGHT = 9.0  WIDTH = 70.0  CONS = WALL_CON
* 117 *          AZIMUTH = 90  ..
* 118 *
* 119 *          WINDOW HEIGHT = 4.0  WIDTH = 6.0  G-T = G_TYPE1
* 120 *          MULTIPLIER = 2.0  ..
* 121 *
* 122 *      E-W      HEIGHT = 9.0  WIDTH = 59.0  CONS = WALL_CON
* 123 *          AZIMUTH = 270  ..
* 124 *
* 125 *          WINDOW HEIGHT = 4.0  WIDTH = 14.0  G-T = G_TYPE1 ..
* 126 *
* 127 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 128 *          MULTIPLIER = 3.0  ..
* 129 *
* 130 *
* 131 * 24HR_OPS_A =SPACE  AREA = 7652.0  VOLUME = 68868.0
* 132 *                   ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 133 *                   NUMBER-OF-PEOPLE = 60.0  PEOPLE-HEAT-GAIN = 550.0
* 134 *                   LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 6.56
* 135 *                   LIGHTING-SCHEDULE = LIGHT_SCHD
* 136 *                   EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 5.0
* 137 *                   INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 138 *                   INF-SCHEDULE = FULL_ON  ..
* 139 *
* 140 *      U-W      HEIGHT = 78.7  WIDTH = 148.0  CONS = FLOORCON
* 141 *          AZIMUTH = 270  ..
* 142 *
* 143 *      ROOF      HEIGHT = 78.7  WIDTH = 148.0  CONS = ROOF_CON
* 144 *          AZIMUTH = 270  TILT = 0  ..
* 145 *
* 146 *      E-W      HEIGHT = 9.0  WIDTH = 148.0  CONS = WALL_CON
* 147 *          AZIMUTH = 90  ..
* 148 *
* 149 *          WINDOW HEIGHT = 4.0  WIDTH = 10.0  G-T = G_TYPE1
* 150 *          MULTIPLIER = 2.0  ..
* 151 *
* 152 *          WINDOW HEIGHT = 4.0  WIDTH = 24.0  G-T = G_TYPE1 ..
* 153 *
* 154 *          DOOR   HEIGHT = 7.5  WIDTH = 3.0  CONS = FLOORCON ..
* 155 *
* 156 *      E-W      HEIGHT = 9.0  WIDTH = 51.0  CONS = WALL_CON
* 157 *          AZIMUTH = 180  ..
* 158 *
* 159 *          WINDOW HEIGHT = 4.0  WIDTH = 8.0  G-T = G_TYPE1 ..
* 160 *
* 161 *      E-W      HEIGHT = 9.0  WIDTH = 160.0  CONS = WALL_CON
* 162 *          AZIMUTH = 270  ..
* 163 *
* 164 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 165 *          MULTIPLIER = 4.0  ..
* 166 *
* 167 *          WINDOW HEIGHT = 14.0  WIDTH = 4.0  G-T = G_TYPE1 ..
* 168 *
* 169 *          WINDOW HEIGHT = 8.0  WIDTH = 4.0  G-T = G_TYPE1 ..
* 170 *
* 171 *          DOOR   HEIGHT = 7.5  WIDTH = 3.0  CONS = DOOR_CON
* 172 *          MULTIPLIER = 2.0  ..
* 173 *
* 174 *      E-W      HEIGHT = 9.0  WIDTH = 60.0  CONS = WALL_CON
* 175 *          AZIMUTH = 0  ..
* 176 *
* 177 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 178 *          MULTIPLIER = 2.0  ..
* 179 *
* 180 *
* 181 * FIREHOUSE =SPACE  AREA = 5928.0  VOLUME = 59280.0
* 182 *                   ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 183 *                   NUMBER-OF-PEOPLE = 25.0  PEOPLE-HEAT-GAIN = 550.0
* 184 *                   LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 3.0
* 185 *                   LIGHTING-SCHEDULE = LIGHT_SCHD
* 186 *                   EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 1.0
* 187 *                   INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 188 *                   INF-SCHEDULE = FULL_ON  ..
* 189 *
* 190 *      U-W      HEIGHT = 78.0  WIDTH = 75.0  CONS = FLOORCON
* 191 *          AZIMUTH = 270  ..
* 192 *
* 193 *      ROOF      HEIGHT = 78.0  WIDTH = 75.0  CONS = ROOF_CON
* 194 *          AZIMUTH = 270  TILT = 0  ..
* 195 *
* 196 *      E-W      HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 197 *          AZIMUTH = 0  ..
* 198 *
* 199 *      E-W      HEIGHT = 9.0  WIDTH = 76.0  CONS = WALL_CON
* 200 *          AZIMUTH = 90  ..
* 201 *
* 202 *          WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 203 *          MULTIPLIER = 5.0  ..
* 204 *
* 205 *          WINDOW HEIGHT = 4.0  WIDTH = 5.0  G-T = G_TYPE1 ..
* 206 *
* 207 *      E-W      HEIGHT = 9.0  WIDTH = 78.0  CONS = WALL_CON
* 208 *          AZIMUTH = 180  ..
* 209 *
* 210 *      E-W      HEIGHT = 9.0  WIDTH = 76.0  CONS = WALL_CON

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* 211 *          AZIMUTH = 270  ..
* 212 *
* 213 *          DOOR  HEIGHT = 8.0  WIDTH = 12.0  CONS = DOOR_CON
* 214 *          MULTIPLIER = 4.0  ..
* 215 *
* 216 *
* 217 * TOWER      =SPACE  AREA = 1728.0  VOLUME = 15552.0
* 218 *          ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = FULL_ON
* 219 *          NUMBER-OF-PEOPLE = 5.0  PEOPLE-HEAT-GAIN = 550.0
* 220 *          LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 0.5
* 221 *          LIGHTING-SCHEDULE = LIGHT_SCHD
* 222 *          EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 12.0
* 223 *          INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 224 *          INF-SCHEDULE = FULL_ON  ..
* 225 *
* 226 *          U-W    HEIGHT = 42.0  WIDTH = 42.0  CONS = FLOORCON
* 227 *          AZIMUTH = 270  ..
* 228 *
* 229 *          ROOF    HEIGHT = 42.0  WIDTH = 42.0  CONS = ROOF_CON
* 230 *          AZIMUTH = 270  TILT = 0  ..
* 231 *
* 232 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 233 *          AZIMUTH = 30  ..
* 234 *
* 235 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 236 *
* 237 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 238 *          AZIMUTH = 90  ..
* 239 *
* 240 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 241 *
* 242 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 243 *          AZIMUTH = 150  ..
* 244 *
* 245 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 246 *
* 247 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 248 *          AZIMUTH = 210  ..
* 249 *
* 250 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 251 *
* 252 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 253 *          AZIMUTH = 270  ..
* 254 *
* 255 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 256 *
* 257 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 258 *          AZIMUTH = 330  ..
* 259 *
* 260 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 261 *
* 262 *
* 263 * 24HR_OPS_B =SPACE  AREA = 4000.0  VOLUME = 36000.0
* 264 *          ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 265 *          NUMBER-OF-PEOPLE = 40.0  PEOPLE-HEAT-GAIN = 550.0
* 266 *          EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 15.0
* 267 *          FLOOR-WEIGHT = 0.1  INF-METHOD = AIR-CHANGE
* 268 *          AIR-CHANGES/HR = 0.5  INF-SCHEDULE = FULL_ON  ..
* 269 *
* 270 *          I-W    HEIGHT = 9.0  WIDTH = 145.0  CONS = AIRWALL
* 271 *          NEXT-TO = 24HR_OPS_A  ..
* 272 *
* 273 *
* 274 * END  ..
* 275 * COMPUTE LOADS  ..
* 276 *
* 277 * INPUT SYSTEMS  ..

```

SDL PROCESSOR INPUT DATA

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* 278 *
* 279 *
* 280 *
* 281 * $-----$
* 282 * $EZ - DOE SYSTEMS INPUT $
* 283 * $-----$
* 284 *
* 285 * $ GENERAL PROJECT DATA
* 286 *
* 286 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 287 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 288 * LINE-3 * DENVER, CO 80227 *
* 289 *
* 290 * LINE-4 *BUILDING 2065, AF OPS *
* 291 * LINE-5 *MODEL WITH SET BACK * ..
* 292 * ABORT ERRORS ..
* 293 * DIAGNOSTIC WARNINGS ..
* 294 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-B,SS-C,SS-F,SS-H,SS-K,SS-O) ..
* 295 *
* 296 * $ SCHEDULES
* 297 *
* 298 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 299 * FULL_OFF_D =DAY-SCHEDULE (1,24) (1.) ..
* 300 * HEAT_68_D =DAY-SCHEDULE (1,24) (73.) ..
* 301 * COOL_75_D =DAY-SCHEDULE (1,24) (75.) ..
* 302 * COOL_78_D =DAY-SCHEDULE (1,24) (78.) ..
* 303 * HT_AVAIL_D =DAY-SCHEDULE (1,24) (1.) ..
* 304 * FAN_WSB_D =DAY-SCHEDULE (1,6) (0.)
* 305 * (7,16) (1.)
* 306 * (17,24) (0.) ..
* 307 * HT_W_SB_D =DAY-SCHEDULE (1,6) (50.)
* 308 * (7,16) (74.)
* 309 * (17,24) (50.) ..
* 310 * HEAT50_D =DAY-SCHEDULE (1,24) (50.) ..
* 311 *
* 312 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 313 *
* 314 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 315 *
* 316 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 317 *
* 318 * COOL_75_W =WEEK-SCHEDULE (ALL) COOL_75_D ..
* 319 *
* 320 * COOL_78_W =WEEK-SCHEDULE (ALL) COOL_78_D ..
* 321 *
* 322 * HT_AVAIL_W =WEEK-SCHEDULE (ALL) HT_AVAIL_D ..
* 323 *
* 324 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 325 * (SAT) FULL_OFF_D
* 326 * (SUN) FULL_OFF_D
* 327 * (HOL) FAN_WSB_D ..
* 328 *
* 329 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT_W_SB_D
* 330 * (SAT) HEAT50_D
* 331 * (SUN) HEAT50_D
* 332 * (HOL) HT_W_SB_D ..
* 333 *
* 334 *
* 335 * $ FULL_ON SCHEDULE
* 336 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 337 *
* 338 * $ FULL OFF SCHEDULE
* 339 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 340 *
* 341 * $ HEATING SCHEDULE
* 342 * HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 343 *
* 344 * COOL_75_Y =SCHEDULE THRU DEC 31 COOL_75_W ..
* 345 *
* 346 * COOL_78_Y =SCHEDULE THRU DEC 31 COOL_78_W ..
* 347 *
* 348 * $ MONTHS HEAT IS AVAIL.
* 349 * HEAT_AVAIL =SCHEDULE THRU MAY 31 HT_AVAIL_W
* 350 * THRU SEP 15 FULL_OFF_W
* 351 * THRU DEC 31 HT_AVAIL_W ..
* 352 *
* 353 * $ FAN SET BACK SCHEDULE
* 354 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 355 *
* 356 * $ HEATING SCHD W SET BACK
* 357 * HT68_WSB =SCHEDULE THRU MAY 15 HT68_WSB_W
* 358 * THRU OCT 1 FULL_OFF_W
* 359 * THRU DEC 31 HT68_WSB_W ..
* 360 *
* 361 *
* 362 *
* 363 * $ ZONE DESCRIPTION
* 364 *
* 365 * ADMIN =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 366 * HEAT-TEMP-SCH = HT68_WSB ZONE-TYPE = CONDITIONED
* 367 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 368 * BASEBOARD-CTRL = THERMOSTATIC
* 369 * BASEBOARD-RATING = -95079. ASSIGNED-CFM = 5250.
* 370 * OUTSIDE-AIR-CFM = 420. SIZING-OPTION = FROM-LOADS ..
* 371 *
* 372 * 24HR_OPS_A =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 373 * HEAT-TEMP-SCH = HEAT_68 ZONE-TYPE = CONDITIONED
* 374 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 375 * BASEBOARD-CTRL = THERMOSTATIC
* 376 * BASEBOARD-RATING = -158366. ASSIGNED-CFM = 9660.
* 377 * OUTSIDE-AIR-CFM = 4637. SIZING-OPTION = FROM-LOADS ..

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* 378 *
* 379 * FIREHOUSE =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 380 * HEAT-TEMP-SCH = HEAT 68 COOL-TEMP-SCH = COOL_75_Y
* 381 * ZONE-TYPE = CONDITIONED
* 382 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 383 * BASEBOARD-CTRL = THERMOSTATIC
* 384 * BASEBOARD-RATING = -117900. ASSIGNED-CFM = 6840.
* 385 * OUTSIDE-AIR-CFM = 4172. SIZING-OPTION = FROM-LOADS ..
* 386 *
* 387 * TOWER =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 78.0
* 388 * HEAT-TEMP-SCH = HEAT 68 COOL-TEMP-SCH = COOL_78_Y
* 389 * ZONE-TYPE = CONDITIONED
* 390 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 391 * BASEBOARD-CTRL = THERMOSTATIC
* 392 * BASEBOARD-RATING = -2119. ASSIGNED-CFM = 2415.
* 393 * SIZING-OPTION = FROM-LOADS ..
* 394 *
* 395 * 24HR_OPS_B =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 396 * COOL-TEMP-SCH = COOL_75_Y ZONE-TYPE = CONDITIONED
* 397 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 398 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 8200.
* 399 * SIZING-OPTION = FROM-LOADS ..
* 400 *
* 401 *
* 402 *
* 403 * $ SYSTEM DESCRIPTION
* 404 *
* 405 * HV_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 406 * MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_Avail
* 407 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 408 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 409 * SUPPLY-CFM = 5250. RETURN-CFM = 4830.
* 410 * RATED-CFM = 5250. MIN-OUTSIDE-AIR = 0.08
* 411 * FAN-SCHEDULE = FAN W SB SUPPLY-DELTA-T = 2.4
* 412 * SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 413 * NIGHT-VENT-DT = 0.0 HEATING-CAPACITY = -56900.
* 414 * FURNACE-AUX = 0.
* 415 * ZONE-NAMES = (ADMIN) ..
* 416 *
* 417 * HV_1&2&MU1 =SYSTEM SYSTEM-TYPE = HVSYS
* 418 * MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_Avail
* 419 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 420 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 421 * SUPPLY-CFM = 9660. RETURN-CFM = 5023.
* 422 * RATED-CFM = 9660. MIN-OUTSIDE-AIR = 0.48
* 423 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 424 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 425 * HEATING-CAPACITY = -466800. FURNACE-AUX = 0.
* 426 * ZONE-NAMES = (24HR_OPS_A) ..
* 427 *
* 428 * HV_4&MU2 =SYSTEM SYSTEM-TYPE = HVSYS
* 429 * MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_Avail
* 430 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 431 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 432 * SUPPLY-CFM = 6840. RETURN-CFM = 2668.
* 433 * RATED-CFM = 6840. MIN-OUTSIDE-AIR = 0.61
* 434 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 435 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 436 * HEATING-CAPACITY = -360300. FURNACE-AUX = 0.
* 437 * ZONE-NAMES = (FIREHOUSE) ..
* 438 *
* 439 * AC1-7 =SYSTEM SYSTEM-TYPE = PTAC
* 440 * MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 441 * HEATING-SCHEDULE = FULL OFF SUPPLY-CFM = 8200.
* 442 * RATED-CFM = 8200. FAN-CONTROL = CONSTANT-VOLUME
* 443 * SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 444 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 445 * COOLING-CAPACITY = 178000. COOL-SH-CAP = 160500.
* 446 * COOL-FT-MIN = 0. MIN-HP-T = 0.
* 447 * HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 448 * ZONE-NAMES = (24HR_OPS_B) ..
* 449 *
* 450 * AC9 =SYSTEM SYSTEM-TYPE = PTAC
* 451 * MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 452 * HEATING-SCHEDULE = FULL OFF SUPPLY-CFM = 2415.
* 453 * RATED-CFM = 2415. FAN-CONTROL = CONSTANT-VOLUME
* 454 * SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 455 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 456 * COOLING-CAPACITY = 64300. COOL-SH-CAP = 48900.
* 457 * COOL-FT-MIN = 0. MIN-HP-T = 0.
* 458 * HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 459 * ZONE-NAMES = (TOWER) ..
* 460 * END ..
* 461 * COMPUTE SYSTEMS ..
* 462 *
* 463 * INPUT PLANT ..

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P D L P R O C E S S O R I N P U T D A T A

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* 464 *
* 465 *
* 466 *          $-----$
* 467 *          $ E Z - D O E   P L A N T S   I N P U T $
* 468 *          $-----$
* 469 *
* 470 *          $ GENERAL PROJECT DATA
* 471 *
* 472 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 473 *        LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 474 *        LINE-3 *      DENVER,      CO      80227      *
* 475 *
* 476 *        LINE-4 *BUILDING 2065, AF OPS      *
* 477 *        LINE-5 *MODEL WITH SET BACK      * ..
* 478 *
* 479 * ABORT      ERRORS ..
* 480 * DIAGNOSTIC  WARNINGS ..
* 481 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 482 * ..
* 483 *
* 484 *          $ SCHEDULES
* 485 *
* 486 * FULL_ON_D  =DAY-SCHEDULE (1,24) (1.) ..
* 487 *
* 488 *
* 489 * FULL_ON_W  =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 490 *
* 491 *
* 492 * $ FULL ON SCHEDULE
* 493 * FULL_ON    =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 494 *
* 495 *
* 496 *
* 497 *          $ EQUIPMENT DESCRIPTION
* 498 *
* 499 * B1          =PLANT-EQUIPMENT  TYPE = STM-BOILER
* 500 *              SIZE = 2. ..
* 501 *
* 502 * PLANT-PARAMETERS  BOILER-CONTROL = STANDBY STM-BOILER-HIR = 1.25 ..
* 503 *
* 504 *
* 505 * ENERGY-RESOURCE  RESOURCE = ELECTRICITY ..
* 506 * ENERGY-RESOURCE  RESOURCE = FUEL-OIL ..
* 507 *
* 508 * ENERGY-STORAGE  HEAT-STORE-RATE = 2.65 HEAT-SUPPLY-RATE = 2.65
* 509 *                  HTANK-BASE-T = 195.0 HTANK-T-RANGE = 50.0
* 510 *                  HEAT-STORE-SCH = FULL_ON ..
* 511 *
* 512 *
* 513 *
* 514 * END ..
* 515 * COMPUTE PLANT ..
* 516 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	246.91	5,823.04	0.00
SPACE COOL	230.54	0.00	0.00
HVAC AUX	461.54	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	103.24	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1,046.30	0.00	0.00
	-----	-----	-----
TOTAL	2,088.53	5,823.04	0.00

TOTAL SITE ENERGY 7911.78 MBTU 334.8 KBTU/SQFT-YR GROSS-AREA 334.8 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 12095.36 MBTU 511.9 KBTU/SQFT-YR GROSS-AREA 511.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 13.4  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	181.232	1056.780
JAN	PEAK (KBTU)	279.509	1974.659
	DY/HR	26/13	5/12
	TOTAL (MBTU)	163.560	848.168
FEB	PEAK (KBTU)	280.238	1752.482
	DY/HR	7/11	4/10
	TOTAL (MBTU)	180.789	845.937
MAR	PEAK (KBTU)	281.566	1822.741
	DY/HR	11/11	9/ 7
	TOTAL (MBTU)	173.762	510.916
APR	PEAK (KBTU)	278.735	1361.783
	DY/HR	12/11	1/ 7
	TOTAL (MBTU)	173.751	295.578
MAY	PEAK (KBTU)	277.329	1084.669
	DY/HR	31/13	3/ 7
	TOTAL (MBTU)	167.098	93.336
JUN	PEAK (KBTU)	296.038	686.635
	DY/HR	17/13	8/ 5
	TOTAL (MBTU)	177.843	54.004
JUL	PEAK (KBTU)	315.724	539.656
	DY/HR	18/13	25/ 5
	TOTAL (MBTU)	173.929	78.488
AUG	PEAK (KBTU)	299.950	764.804
	DY/HR	9/14	6/24
	TOTAL (MBTU)	167.670	170.872
SEP	PEAK (KBTU)	311.622	932.667
	DY/HR	2/14	24/ 6
	TOTAL (MBTU)	174.287	376.479
OCT	PEAK (KBTU)	274.832	1201.440
	DY/HR	26/14	28/ 7
	TOTAL (MBTU)	173.758	609.909
NOV	PEAK (KBTU)	281.634	1521.693
	DY/HR	29/13	29/ 7
	TOTAL (MBTU)	180.974	882.664
DEC	PEAK (KBTU)	279.713	1782.068
	DY/HR	13/13	28/ 7
	ONE YEAR	2088.653	5823.131
	USE/PEAK	315.724	1974.659



**COMPUTER SIMULATIONS**  
**BUILDING 2065**

RUN 3 - DDC

LDL PROCESSOR INPUT DATA

3/19/1995 12: 0: 6 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 *      $-----$
* 7 *      $EZ - DOE LOADS INPUT $
* 8 *      $-----$
* 9 *
*10 *      $ GENERAL PROJECT DATA
*11 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
*12 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
*13 *      LINE-3 *      DENVER,      CO      80227      *
*14 *
*15 *      LINE-4 *BUILDING 2065, AF OPS      *
*16 *      LINE-5 *MODEL WITH SET BACK AND DDC      * ..
*17 *
*18 * ABORT      ERRORS ..
*19 * DIAGNOSTIC  WARNINGS ..
*20 * LOADS-REPORT SUMMARY=(LS-C,LS-D) ..
*21 * BUILDING-LOCATION X-REF = 0.0
*22 * Y-REF = 0.0 ..
*23 * RUN-PERIOD   JAN 1 1994 THRU DEC 31 1994 ..
*24 *
*25 *
*26 *      $ SCHEDULES
*27 *
*28 * FULL_ON_D  =DAY-SCHEDULE (1,24) (1.) ..
*29 *
*30 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
*31 *
*32 * PEOPLE_D   =DAY-SCHEDULE (1,6) (0.1)
*33 *              (7) (0.5)
*34 *              (8,11) (0.8)
*35 *              (12,16) (0.7,0.6,0.9,0.6,0.5)
*36 *              (17,18) (0.4,0.3)
*37 *              (19,24) (0.1) ..
*38 *
*39 * PEOPLE_SAT =DAY-SCHEDULE (1,24) (0.1) ..
*40 *
*41 * LIGHT_D    =DAY-SCHEDULE (1,7) (0.2)
*42 *              (8,12) (0.4,0.5,0.6,0.7,0.3)
*43 *              (13,15) (0.7,0.6,0.45)
*44 *              (16,24) (0.2) ..
*45 *
*46 * LIGHT_SAT  =DAY-SCHEDULE (1,24) (0.2) ..
*47 *
*48 *
*49 * PEOPLE_W   =WEEK-SCHEDULE (WD) PEOPLE_D
*50 *              (WEH) PEOPLE_SAT ..
*51 *
*52 * FULL_ON_W  =WEEK-SCHEDULE (ALL) FULL_ON_D ..
*53 *
*54 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
*55 *
*56 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_D
*57 *              (WEH) LIGHT_SAT ..
*58 *
*59 *
*60 * $ FULL ON SCHEDULE
*61 * FULL_ON   =SCHEDULE THRU DEC 31 FULL_ON_W ..
*62 *
*63 * $ FULL OFF SCHEDULE
*64 * FULL_OFF  =SCHEDULE THRU DEC 31 FULL_OFF_W ..
*65 *
*66 * $ OCCUPANCY SCHEDULE
*67 * PEOPLE_SCD =SCHEDULE THRU DEC 31 PEOPLE_W ..
*68 *
*69 * $ LIGHTING SCHEDULE
*70 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
*71 *
*72 *
*73 *
*74 *      $ CONSTRUCTION TYPES
*75 *
*76 *
*77 *
*78 * FLOORCON =CONSTRUCTION U-VALUE = 0.100 ..
*79 * ROOF_CON =CONSTRUCTION U-VALUE = 0.050 ..
*80 * WALL_CON =CONSTRUCTION U-VALUE = 0.200 ..
*81 * DOOR_CON =CONSTRUCTION U-VALUE = 0.400 ..
*82 * AIRWALL  =CONSTRUCTION U-VALUE = 20.000 ..
*83 *
*84 * G_TYPE1   =GLASS-TYPE GLASS-TYPE-CODE = 1
*85 *              PANES = 1
*86 *              GLASS-CONDUCTANCE = 1.130 ..
*87 *
*88 *
*89 *
*90 *
*91 *
*92 *      $ SPACE DESCRIPTION
*93 * ADMIN     =SPACE AREA = 4322.0 VOLUME = 38898.0
*94 *              ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCD
*95 *              NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 550.0
*96 *              LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.44
*97 *              LIGHTING-SCHEDULE = LIGHT_SCHD
*98 *              EQUIP-SCHEDULE = FULL_ON EQUIPMENT-KW = 2.0
*99 *              INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5
*100 *              INF-SCHEDULE = FULL_ON ..
*101 *
*102 *      U-W      HEIGHT = 67.0 WIDTH = 64.5 CONS = FLOORCON

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* 103 *          AZIMUTH = 270  ..
* 104 *
* 105 *      ROOF      HEIGHT = 67.0  WIDTH = 64.5  CONS = ROOF_CON
* 106 *          HEIGHT = 270  TILT = 0  ..
* 107 *
* 108 *      E-W      HEIGHT = 9.0  WIDTH = 67.0  CONS = WALL_CON
* 109 *          AZIMUTH = 0  ..
* 110 *
* 111 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 112 *          MULTIPLIER = 4.0  ..
* 113 *
* 114 *          DOOR   HEIGHT = 7.5  WIDTH = 3.0  CONS = DOOR_CON ..
* 115 *
* 116 *      E-W      HEIGHT = 9.0  WIDTH = 70.0  CONS = WALL_CON
* 117 *          AZIMUTH = 90  ..
* 118 *
* 119 *          WINDOW HEIGHT = 4.0  WIDTH = 6.0  G-T = G_TYPE1
* 120 *          MULTIPLIER = 2.0  ..
* 121 *
* 122 *      E-W      HEIGHT = 9.0  WIDTH = 59.0  CONS = WALL_CON
* 123 *          AZIMUTH = 270  ..
* 124 *
* 125 *          WINDOW HEIGHT = 4.0  WIDTH = 14.0  G-T = G_TYPE1 ..
* 126 *
* 127 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 128 *          MULTIPLIER = 3.0  ..
* 129 *
* 130 *
* 131 * 24HR_OPS_A =SPACE  AREA = 7652.0  VOLUME = 68868.0
* 132 *                   ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 133 *                   NUMBER-OF-PEOPLE = 60.0  PEOPLE-HEAT-GAIN = 550.0
* 134 *                   LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 6.56
* 135 *                   LIGHTING-SCHEDULE = LIGHT_SCHD
* 136 *                   EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 5.0
* 137 *                   INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 138 *                   INF-SCHEDULE = FULL_ON  ..
* 139 *
* 140 *      U-W      HEIGHT = 78.7  WIDTH = 148.0  CONS = FLOORCON
* 141 *          AZIMUTH = 270  ..
* 142 *
* 143 *      ROOF      HEIGHT = 78.7  WIDTH = 148.0  CONS = ROOF_CON
* 144 *          AZIMUTH = 270  TILT = 0  ..
* 145 *
* 146 *      E-W      HEIGHT = 9.0  WIDTH = 148.0  CONS = WALL_CON
* 147 *          AZIMUTH = 90  ..
* 148 *
* 149 *          WINDOW HEIGHT = 4.0  WIDTH = 10.0  G-T = G_TYPE1
* 150 *          MULTIPLIER = 2.0  ..
* 151 *
* 152 *          WINDOW HEIGHT = 4.0  WIDTH = 24.0  G-T = G_TYPE1 ..
* 153 *
* 154 *          DOOR   HEIGHT = 7.5  WIDTH = 3.0  CONS = FLOORCON ..
* 155 *
* 156 *      E-W      HEIGHT = 9.0  WIDTH = 51.0  CONS = WALL_CON
* 157 *          AZIMUTH = 180  ..
* 158 *
* 159 *          WINDOW HEIGHT = 4.0  WIDTH = 8.0  G-T = G_TYPE1 ..
* 160 *
* 161 *      E-W      HEIGHT = 9.0  WIDTH = 160.0  CONS = WALL_CON
* 162 *          AZIMUTH = 270  ..
* 163 *
* 164 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 165 *          MULTIPLIER = 4.0  ..
* 166 *
* 167 *          WINDOW HEIGHT = 14.0  WIDTH = 4.0  G-T = G_TYPE1 ..
* 168 *
* 169 *          WINDOW HEIGHT = 8.0  WIDTH = 4.0  G-T = G_TYPE1 ..
* 170 *
* 171 *          DOOR   HEIGHT = 7.5  WIDTH = 3.0  CONS = DOOR_CON
* 172 *          MULTIPLIER = 2.0  ..
* 173 *
* 174 *      E-W      HEIGHT = 9.0  WIDTH = 60.0  CONS = WALL_CON
* 175 *          AZIMUTH = 0  ..
* 176 *
* 177 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 178 *          MULTIPLIER = 2.0  ..
* 179 *
* 180 *
* 181 * FIREHOUSE =SPACE  AREA = 5928.0  VOLUME = 59280.0
* 182 *                   ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 183 *                   NUMBER-OF-PEOPLE = 25.0  PEOPLE-HEAT-GAIN = 550.0
* 184 *                   LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 3.0
* 185 *                   LIGHTING-SCHEDULE = LIGHT_SCHD
* 186 *                   EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 1.0
* 187 *                   INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 188 *                   INF-SCHEDULE = FULL_ON  ..
* 189 *
* 190 *      U-W      HEIGHT = 78.0  WIDTH = 75.0  CONS = FLOORCON
* 191 *          AZIMUTH = 270  ..
* 192 *
* 193 *      ROOF      HEIGHT = 78.0  WIDTH = 75.0  CONS = ROOF_CON
* 194 *          AZIMUTH = 270  TILT = 0  ..
* 195 *
* 196 *      E-W      HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 197 *          AZIMUTH = 0  ..
* 198 *
* 199 *      E-W      HEIGHT = 9.0  WIDTH = 76.0  CONS = WALL_CON
* 200 *          AZIMUTH = 90  ..
* 201 *
* 202 *          WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 203 *          MULTIPLIER = 5.0  ..
* 204 *
* 205 *          WINDOW HEIGHT = 4.0  WIDTH = 5.0  G-T = G_TYPE1 ..
* 206 *
* 207 *      E-W      HEIGHT = 9.0  WIDTH = 78.0  CONS = WALL_CON
* 208 *          AZIMUTH = 180  ..
* 209 *
* 210 *      E-W      HEIGHT = 9.0  WIDTH = 76.0  CONS = WALL_CON

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* 211 *          AZIMUTH = 270  ..
* 212 *
* 213 *          DOOR  HEIGHT = 8.0  WIDTH = 12.0  CONS = DOOR_CON
* 214 *          MULTIPLIER = 4.0  ..
* 215 *
* 216 *
* 217 * TOWER      =SPACE  AREA = 1728.0  VOLUME = 15552.0
* 218 *          ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = FULL_ON
* 219 *          NUMBER-OF-PEOPLE = 5.0  PEOPLE-HEAT-GAIN = 550.0
* 220 *          LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 0.5
* 221 *          LIGHTING-SCHEDULE = LIGHT_SCHD
* 222 *          EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 12.0
* 223 *          INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 224 *          INF-SCHEDULE = FULL_ON  ..
* 225 *
* 226 *          U-W    HEIGHT = 42.0  WIDTH = 42.0  CONS = FLOORCON
* 227 *          AZIMUTH = 270  ..
* 228 *
* 229 *          ROOF    HEIGHT = 42.0  WIDTH = 42.0  CONS = ROOF_CON
* 230 *          AZIMUTH = 270  TILT = 0  ..
* 231 *
* 232 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 233 *          AZIMUTH = 30  ..
* 234 *
* 235 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 236 *
* 237 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 238 *          AZIMUTH = 90  ..
* 239 *
* 240 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 241 *
* 242 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 243 *          AZIMUTH = 150  ..
* 244 *
* 245 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 246 *
* 247 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 248 *          AZIMUTH = 210  ..
* 249 *
* 250 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 251 *
* 252 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 253 *          AZIMUTH = 270  ..
* 254 *
* 255 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 256 *
* 257 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 258 *          AZIMUTH = 330  ..
* 259 *
* 260 *          WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 261 *
* 262 *
* 263 * 24HR_OPS_B =SPACE  AREA = 4000.0  VOLUME = 36000.0
* 264 *          ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 265 *          NUMBER-OF-PEOPLE = 40.0  PEOPLE-HEAT-GAIN = 550.0
* 266 *          EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 15.0
* 267 *          FLOOR-WEIGHT = 0.1  INF-METHOD = AIR-CHANGE
* 268 *          AIR-CHANGES/HR = 0.5  INF-SCHEDULE = FULL_ON  ..
* 269 *
* 270 *          I-W    HEIGHT = 9.0  WIDTH = 145.0  CONS = AIRWALL
* 271 *          NEXT-TO = 24HR_OPS_A  ..
* 272 *
* 273 *
* 274 * END  ..
* 275 * COMPUTE LOADS  ..
* 276 *
* 277 * INPUT SYSTEMS  ..

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SDL PROCESSOR INPUT DATA

3/19/1995 12: 0: 6 SDL RUN 1

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* 278 *
* 279 *
* 280 *
* 281 *          $-----$
* 282 *          $EZ - DOE SYSTEMS INPUT $
* 283 *          $-----$
* 284 *
* 285 *          $ GENERAL PROJECT DATA
* 286 *
* 287 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 288 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 289 * LINE-3 * DENVER, CO 80227 *
* 290 *
* 291 * LINE-4 *BUILDING 2065, AF OPS *
* 292 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 293 * ABORT ERRORS ..
* 294 * DIAGNOSTIC WARNINGS ..
* 295 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-B,SS-C,SS-F,SS-H,SS-K,SS-O) ..
* 296 *
* 297 *          $ SCHEDULES
* 298 *
* 299 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 300 * FULL_OFF_D =DAY-SCHEDULE (1,24) (1.) ..
* 301 * HEAT_68_D =DAY-SCHEDULE (1,24) (68.) ..
* 302 * COOL_75_D =DAY-SCHEDULE (1,24) (75.) ..
* 303 * COOL_78_D =DAY-SCHEDULE (1,24) (78.) ..
* 304 * HT_AVAIL_D =DAY-SCHEDULE (1,24) (1.) ..
* 305 * FAN_WSB_D =DAY-SCHEDULE (1,6) (0.)
* 306 * (7,16) (1.)
* 307 * HT_W_SB_D =DAY-SCHEDULE (17,24) (0.) ..
* 308 * (1,6) (50.)
* 309 * (7,16) (68.)
* 310 * (17,24) (50.) ..
* 311 * HEAT50_D =DAY-SCHEDULE (1,24) (50.) ..
* 312 *
* 313 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 314 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 315 *
* 316 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 317 *
* 318 * COOL_75_W =WEEK-SCHEDULE (ALL) COOL_75_D ..
* 319 *
* 320 * COOL_78_W =WEEK-SCHEDULE (ALL) COOL_78_D ..
* 321 *
* 322 * HT_AVAIL_W =WEEK-SCHEDULE (ALL) HT_AVAIL_D ..
* 323 *
* 324 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 325 * (SAT) FULL_OFF_D
* 326 * (SUN) FULL_OFF_D
* 327 * (HOL) FAN_WSB_D ..
* 328 *
* 329 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT_W_SB_D
* 330 * (SAT) HEAT50_D
* 331 * (SUN) HEAT50_D
* 332 * (HOL) HT_W_SB_D ..
* 333 *
* 334 *
* 335 * $ FULL_ON SCHEDULE
* 336 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 337 *
* 338 * $ FULL OFF SCHEDULE
* 339 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 340 *
* 341 * $ HEATING SCHEDULE
* 342 * HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 343 *
* 344 * COOL_75_Y =SCHEDULE THRU DEC 31 COOL_75_W ..
* 345 *
* 346 * COOL_78_Y =SCHEDULE THRU DEC 31 COOL_78_W ..
* 347 *
* 348 * $ MONTHS HEAT IS AVAIL.
* 349 * HEAT_AVAIL =SCHEDULE THRU MAY 31 HT_AVAIL_W
* 350 * THRU SEP 15 FULL_OFF_W
* 351 * THRU DEC 31 HT_AVAIL_W ..
* 352 *
* 353 * $ FAN SET BACK SCHEDULE
* 354 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 355 *
* 356 * $ HEATING SCHD W SET BACK
* 357 * HT68_WSB =SCHEDULE THRU MAY 15 HT68_WSB_W
* 358 * THRU OCT 1 FULL_OFF_W
* 359 * THRU DEC 31 HT68_WSB_W ..
* 360 *
* 361 *
* 362 *
* 363 *
* 364 *
* 365 * ADMIN =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 366 * HEAT-TEMP-SCH = HT68_WSB ZONE-TYPE = CONDITIONED
* 367 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 368 * BASEBOARD-CTRL = THERMOSTATIC
* 369 * BASEBOARD-RATING = -95079. ASSIGNED-CFM = 5250.
* 370 * OUTSIDE-AIR-CFM = 420. SIZING-OPTION = FROM-LOADS ..
* 371 *
* 372 * 24HR_OPS_A =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 373 * HEAT-TEMP-SCH = HEAT_68 ZONE-TYPE = CONDITIONED
* 374 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 375 * BASEBOARD-CTRL = THERMOSTATIC
* 376 * BASEBOARD-RATING = -158366. ASSIGNED-CFM = 9660.
* 377 * OUTSIDE-AIR-CFM = 4637. SIZING-OPTION = FROM-LOADS ..

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* 378 *
* 379 * FIREHOUSE =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 380 * HEAT-TEMP-SCH = HEAT 68 COOL-TEMP-SCH = COOL_75_Y
* 381 * ZONE-TYPE = CONDITIONED
* 382 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 383 * BASEBOARD-CTRL = THERMOSTATIC
* 384 * BASEBOARD-RATING = -117900. ASSIGNED-CFM = 6840.
* 385 * OUTSIDE-AIR-CFM = 4172. SIZING-OPTION = FROM-LOADS ..
* 386 *
* 387 * TOWER =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 78.0
* 388 * HEAT-TEMP-SCH = HEAT 68 COOL-TEMP-SCH = COOL_78_Y
* 389 * ZONE-TYPE = CONDITIONED
* 390 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 391 * BASEBOARD-CTRL = THERMOSTATIC
* 392 * BASEBOARD-RATING = -2119. ASSIGNED-CFM = 2415.
* 393 * SIZING-OPTION = FROM-LOADS ..
* 394 *
* 395 * 24HR_OPS_B =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 396 * COOL-TEMP-SCH = COOL_75_Y ZONE-TYPE = CONDITIONED
* 397 * THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 398 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 8200.
* 399 * SIZING-OPTION = FROM-LOADS ..
* 400 *
* 401 *
* 402 * $ SYSTEM DESCRIPTION
* 403 *
* 404 * HV_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 405 * MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_Avail
* 406 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 407 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 408 * SUPPLY-CFM = 5250. RETURN-CFM = 4830.
* 409 * RATED-CFM = 5250. MIN-OUTSIDE-AIR = 0.08
* 410 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 411 * SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 412 * NIGHT-VENT-DT = 0.0 HEATING-CAPACITY = -56900.
* 413 * FURNACE-AUX = 0.
* 414 * ZONE-NAMES = (ADMIN) ..
* 415 *
* 416 * HV_1&2&MU1 =SYSTEM SYSTEM-TYPE = HVSYS
* 417 * MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_Avail
* 418 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 419 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 420 * SUPPLY-CFM = 9660. RETURN-CFM = 5023.
* 421 * RATED-CFM = 9660. MIN-OUTSIDE-AIR = 0.48
* 422 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 423 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 424 * HEATING-CAPACITY = -466800. FURNACE-AUX = 0.
* 425 * ZONE-NAMES = (24HR_OPS_A) ..
* 426 *
* 427 * HV_4&MU2 =SYSTEM SYSTEM-TYPE = HVSYS
* 428 * MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_Avail
* 429 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 430 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 431 * SUPPLY-CFM = 6840. RETURN-CFM = 2668.
* 432 * RATED-CFM = 6840. MIN-OUTSIDE-AIR = 0.61
* 433 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 434 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 435 * HEATING-CAPACITY = -360300. FURNACE-AUX = 0.
* 436 * ZONE-NAMES = (FIREHOUSE) ..
* 437 *
* 438 * AC1-7 =SYSTEM SYSTEM-TYPE = PTAC
* 439 * MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 440 * HEATING-SCHEDULE = FULL OFF SUPPLY-CFM = 8200.
* 441 * RATED-CFM = 8200. FAN-CONTROL = CONSTANT-VOLUME
* 442 * SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 443 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 444 * COOLING-CAPACITY = 178000. COOL-SH-CAP = 160500.
* 445 * COOL-FT-MIN = 0. MIN-HP-T = 0.
* 446 * HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 447 * ZONE-NAMES = (24HR_OPS_B) ..
* 448 *
* 449 * AC9 =SYSTEM SYSTEM-TYPE = PTAC
* 450 * MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 451 * HEATING-SCHEDULE = FULL OFF SUPPLY-CFM = 2415.
* 452 * RATED-CFM = 2415. FAN-CONTROL = CONSTANT-VOLUME
* 453 * SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 454 * NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 455 * COOLING-CAPACITY = 64300. COOL-SH-CAP = 48900.
* 456 * COOL-FT-MIN = 0. MIN-HP-T = 0.
* 457 * HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 458 * ZONE-NAMES = (TOWER) ..
* 459 *
* 460 * END ..
* 461 * COMPUTE SYSTEMS ..
* 462 *
* 463 * INPUT PLANT ..

```

P D L P R O C E S S O R I N P U T D A T A

3/19/1995 12: 0: 6 PDL RUN 1

```

* 464 *
* 465 *
* 466 *      $-----$
* 467 *      $ E Z - D O E   P L A N T S   I N P U T $
* 468 *      $-----$
* 469 *
* 470 *      $ GENERAL PROJECT DATA
* 471 *
* 472 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 473 *      LINE-2 *EZZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 474 *      LINE-3 *      DENVER,      CO      80227      *
* 475 *
* 476 *      LINE-4 *BUILDING 2065, AF OPS      *
* 477 *      LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 478 *
* 479 * ABORT      ERRORS ..
* 480 * DIAGNOSTIC  WARNINGS ..
* 481 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 482 * ..
* 483 *
* 484 *      $ SCHEDULES
* 485 *
* 486 * FULL_ON_D  =DAY-SCHEDULE (1,24) (1.) ..
* 487 *
* 488 *
* 489 * FULL_ON_W  =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 490 *
* 491 *
* 492 * $ FULL ON SCHEDULE
* 493 * FULL_ON   =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 494 *
* 495 *
* 496 *
* 497 *      $ EQUIPMENT DESCRIPTION
* 498 *
* 499 * B1      =PLANT-EQUIPMENT TYPE = STM-BOILER
* 500 *      SIZE = 2. ..
* 501 *
* 502 * PLANT-PARAMETERS BOILER-CONTROL = STANDBY STM-BOILER-HIR = 1.25 ..
* 503 *
* 504 *
* 505 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 506 * ENERGY-RESOURCE RESOURCE = FUEL-OIL ..
* 507 *
* 508 * ENERGY-STORAGE HEAT-STORE-RATE = 2.65 HEAT-SUPPLY-RATE = 2.65
* 509 *      HTANK-BASE-T = 195.0 HTANK-T-RANGE = 50.0
* 510 *      HEAT-STORE-SCH = FULL_ON ..
* 511 *
* 512 *
* 513 *
* 514 * END ..
* 515 * COMPUTE PLANT ..
* 516 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	208.36	4,707.61	0.00
SPACE COOL	133.11	0.00	0.00
HVAC AUX	459.80	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	103.24	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1,046.30	0.00	0.00
	-----	-----	-----
TOTAL	1,950.81	4,707.61	0.00

TOTAL SITE ENERGY 6658.57 MBTU 281.8 KBTU/SQFT-YR GROSS-AREA 281.8 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 10566.29 MBTU 447.2 KBTU/SQFT-YR GROSS-AREA 447.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 7.3  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.



MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	174.314	950.134
JAN	PEAK (KBTU)	271.716	1916.483
	DY/HR	6/13	5/12
	TOTAL (MBTU)	154.251	746.075
FEB	PEAK (KBTU)	260.700	1610.066
	DY/HR	18/13	14/ 7
	TOTAL (MBTU)	170.203	726.479
MAR	PEAK (KBTU)	262.980	1707.180
	DY/HR	11/13	9/ 7
	TOTAL (MBTU)	158.918	381.120
APR	PEAK (KBTU)	259.170	1217.338
	DY/HR	11/11	1/ 7
	TOTAL (MBTU)	158.778	192.764
MAY	PEAK (KBTU)	269.223	896.030
	DY/HR	9/13	2/ 7
	TOTAL (MBTU)	156.595	43.538
JUN	PEAK (KBTU)	295.166	470.134
	DY/HR	17/13	8/ 6
	TOTAL (MBTU)	172.001	28.291
JUL	PEAK (KBTU)	315.677	376.789
	DY/HR	18/13	25/ 5
	TOTAL (MBTU)	164.684	37.815
AUG	PEAK (KBTU)	298.101	901.061
	DY/HR	9/14	6/24
	TOTAL (MBTU)	155.159	98.509
SEP	PEAK (KBTU)	311.541	771.169
	DY/HR	2/14	24/ 6
	TOTAL (MBTU)	157.992	252.564
OCT	PEAK (KBTU)	258.563	1030.247
	DY/HR	26/13	28/ 7
	TOTAL (MBTU)	159.331	483.114
NOV	PEAK (KBTU)	264.343	1379.622
	DY/HR	29/13	29/ 7
	TOTAL (MBTU)	168.704	767.234
DEC	PEAK (KBTU)	262.438	1653.525
	DY/HR	13/13	28/ 7
	ONE YEAR	1950.930	4707.639
	USE/PEAK	315.677	1916.483

LDL PROCESSOR INPUT DATA

3/18/1995 13:26:36 LDL RUN 1

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* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $ E Z - D O E   L O A D S   I N P U T $
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 * EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 * BUILDING 2065, AF OPS *
* 16 * LINE-5 * MODEL WITH SET BACK AND DDC * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D) ..
* 21 * BUILDING-LOCATION X-REF = 0.0
* 22 * Y-REF = 0.0 ..
* 23 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 24 *
* 25 *
* 26 * $ SCHEDULES
* 27 *
* 28 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 29 *
* 30 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 31 *
* 32 * PEOPLE_D =DAY-SCHEDULE (1,6) (0.1)
* 33 * (7) (0.5)
* 34 * (8,11) (0.8)
* 35 * (12,16) (0.7,0.6,0.9,0.6,0.5)
* 36 * (17,18) (0.4,0.3)
* 37 * (19,24) (0.1) ..
* 38 *
* 39 * PEOPLE_SAT =DAY-SCHEDULE (1,24) (0.1) ..
* 40 *
* 41 * LIGHT_D =DAY-SCHEDULE (1,7) (0.2)
* 42 * (8,12) (0.4,0.5,0.6,0.7,0.3)
* 43 * (13,15) (0.7,0.6,0.45)
* 44 * (16,24) (0.2) ..
* 45 *
* 46 * LIGHT_SAT =DAY-SCHEDULE (1,24) (0.2) ..
* 47 *
* 48 *
* 49 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 50 * (WEH) PEOPLE_SAT ..
* 51 *
* 52 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 53 *
* 54 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 55 *
* 56 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_D
* 57 * (WEH) LIGHT_SAT ..
* 58 *
* 59 *
* 60 * $ FULL ON SCHEDULE
* 61 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 62 *
* 63 * $ FULL OFF SCHEDULE
* 64 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 65 *
* 66 * $ OCCUPANCY SCHEDULE
* 67 * PEOPLE_SCD =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 68 *
* 69 * $ LIGHTING SCHEDULE
* 70 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 71 *
* 72 *
* 73 *
* 74 * $ CONSTRUCTION TYPES
* 75 *
* 76 *
* 77 *
* 78 * FLOORCON =CONSTRUCTION U-VALUE = 0.100 ..
* 79 * ROOF_CON =CONSTRUCTION U-VALUE = 0.050 ..
* 80 * WALL_CON =CONSTRUCTION U-VALUE = 0.200 ..
* 81 * DOOR_CON =CONSTRUCTION U-VALUE = 0.400 ..
* 82 * AIRWALL =CONSTRUCTION U-VALUE = 20.000 ..
* 83 *
* 84 * G_TYPE1 =GLASS-TYPE GLASS-TYPE-CODE = 1
* 85 * PANES = 1
* 86 * GLASS-CONDUCTANCE = 1.130 ..
* 87 *
* 88 *
* 89 *
* 90 *
* 91 * $ SPACE DESCRIPTION
* 92 *
* 93 * ADMIN =SPACE AREA = 4322.0 VOLUME = 38898.0
* 94 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCD
* 95 * NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 550.0
* 96 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.44
* 97 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 98 * EQUIP-SCHEDULE = FULL_ON EQUIPMENT-KW = 2.0
* 99 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5
* 100 * INF-SCHEDULE = FULL_ON ..
* 101 *
* 102 * U-W HEIGHT = 67.0 WIDTH = 64.5 CONS = FLOORCON

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* 103 *          AZIMUTH = 270  ..
* 104 *
* 105 *      ROOF      HEIGHT = 67.0  WIDTH = 64.5  CONS = ROOF_CON
* 106 *          AZIMUTH = 270  TILT = 0  ..
* 107 *
* 108 *      E-W      HEIGHT = 9.0  WIDTH = 67.0  CONS = WALL_CON
* 109 *          AZIMUTH = 0  ..
* 110 *
* 111 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 112 *          MULTIPLIER = 4.0  ..
* 113 *
* 114 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOOR_CON ..
* 115 *
* 116 *      E-W      HEIGHT = 9.0  WIDTH = 70.0  CONS = WALL_CON
* 117 *          AZIMUTH = 90  ..
* 118 *
* 119 *          WINDOW HEIGHT = 4.0  WIDTH = 6.0  G-T = G_TYPE1
* 120 *          MULTIPLIER = 2.0  ..
* 121 *
* 122 *      E-W      HEIGHT = 9.0  WIDTH = 59.0  CONS = WALL_CON
* 123 *          AZIMUTH = 270  ..
* 124 *
* 125 *          WINDOW HEIGHT = 4.0  WIDTH = 14.0  G-T = G_TYPE1 ..
* 126 *
* 127 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 128 *          MULTIPLIER = 3.0  ..
* 129 *
* 130 *
* 131 * 24HR_OPS_A =SPACE  AREA = 7652.0  VOLUME = 68868.0
* 132 *                   ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 133 *                   NUMBER-OF-PEOPLE = 60.0  PEOPLE-HEAT-GAIN = 550.0
* 134 *                   LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 6.56
* 135 *                   LIGHTING-SCHEDULE = LIGHT_SCHD
* 136 *                   EQUIP-SCHEDULE = FULL ON  EQUIPMENT-KW = 5.0
* 137 *                   INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 138 *                   INF-SCHEDULE = FULL_ON  ..
* 139 *
* 140 *      U-W      HEIGHT = 78.7  WIDTH = 148.0  CONS = FLOORCON
* 141 *          AZIMUTH = 270  ..
* 142 *
* 143 *      ROOF      HEIGHT = 78.7  WIDTH = 148.0  CONS = ROOF_CON
* 144 *          AZIMUTH = 270  TILT = 0  ..
* 145 *
* 146 *      E-W      HEIGHT = 9.0  WIDTH = 148.0  CONS = WALL_CON
* 147 *          AZIMUTH = 90  ..
* 148 *
* 149 *          WINDOW HEIGHT = 4.0  WIDTH = 10.0  G-T = G_TYPE1
* 150 *          MULTIPLIER = 2.0  ..
* 151 *
* 152 *          WINDOW HEIGHT = 4.0  WIDTH = 24.0  G-T = G_TYPE1 ..
* 153 *
* 154 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = FLOORCON ..
* 155 *
* 156 *      E-W      HEIGHT = 9.0  WIDTH = 51.0  CONS = WALL_CON
* 157 *          AZIMUTH = 180  ..
* 158 *
* 159 *          WINDOW HEIGHT = 4.0  WIDTH = 8.0  G-T = G_TYPE1 ..
* 160 *
* 161 *      E-W      HEIGHT = 9.0  WIDTH = 160.0  CONS = WALL_CON
* 162 *          AZIMUTH = 270  ..
* 163 *
* 164 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 165 *          MULTIPLIER = 4.0  ..
* 166 *
* 167 *          WINDOW HEIGHT = 14.0  WIDTH = 4.0  G-T = G_TYPE1 ..
* 168 *
* 169 *          WINDOW HEIGHT = 8.0  WIDTH = 4.0  G-T = G_TYPE1 ..
* 170 *
* 171 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = DOOR_CON
* 172 *          MULTIPLIER = 2.0  ..
* 173 *
* 174 *      E-W      HEIGHT = 9.0  WIDTH = 60.0  CONS = WALL_CON
* 175 *          AZIMUTH = 0  ..
* 176 *
* 177 *          WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 178 *          MULTIPLIER = 2.0  ..
* 179 *
* 180 *
* 181 * FIREHOUSE =SPACE  AREA = 5928.0  VOLUME = 59280.0
* 182 *                   ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 183 *                   NUMBER-OF-PEOPLE = 25.0  PEOPLE-HEAT-GAIN = 550.0
* 184 *                   LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 3.0
* 185 *                   LIGHTING-SCHEDULE = LIGHT_SCHD
* 186 *                   EQUIP-SCHEDULE = FULL ON  EQUIPMENT-KW = 1.0
* 187 *                   INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 188 *                   INF-SCHEDULE = FULL_ON  ..
* 189 *
* 190 *      U-W      HEIGHT = 78.0  WIDTH = 75.0  CONS = FLOORCON
* 191 *          AZIMUTH = 270  ..
* 192 *
* 193 *      ROOF      HEIGHT = 78.0  WIDTH = 75.0  CONS = ROOF_CON
* 194 *          AZIMUTH = 270  TILT = 0  ..
* 195 *
* 196 *      E-W      HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 197 *          AZIMUTH = 0  ..
* 198 *
* 199 *      E-W      HEIGHT = 9.0  WIDTH = 76.0  CONS = WALL_CON
* 200 *          AZIMUTH = 90  ..
* 201 *
* 202 *          WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 203 *          MULTIPLIER = 5.0  ..
* 204 *
* 205 *          WINDOW HEIGHT = 4.0  WIDTH = 5.0  G-T = G_TYPE1 ..
* 206 *
* 207 *      E-W      HEIGHT = 9.0  WIDTH = 78.0  CONS = WALL_CON
* 208 *          AZIMUTH = 180  ..
* 209 *
* 210 *      E-W      HEIGHT = 9.0  WIDTH = 76.0  CONS = WALL_CON

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* 211 *          AZIMUTH = 270 ..
* 212 *
* 213 *          DOOR   HEIGHT = 8.0  WIDTH = 12.0  CONS = DOOR_CON
* 214 *          MULTIPLIER = 4.0 ..
* 215 *
* 216 *
* 217 * TOWER      =SPACE  AREA = 1728.0  VOLUME = 15552.0
* 218 *              ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = FULL_ON
* 219 *              NUMBER-OF-PEOPLE = 5.0  PEOPLE-HEAT-GAIN = 550.0
* 220 *              LIGHTING-TYPE = REC-FLUOR-RV  LIGHTING-KW = 0.5
* 221 *              LIGHTING-SCHEDULE = LIGHT_SCHD
* 222 *              EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 12.0
* 223 *              INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 224 *              INF-SCHEDULE = FULL_ON ..
* 225 *
* 226 *          U-W    HEIGHT = 42.0  WIDTH = 42.0  CONS = FLOORCON
* 227 *              AZIMUTH = 270 ..
* 228 *
* 229 *          ROOF    HEIGHT = 42.0  WIDTH = 42.0  CONS = ROOF_CON
* 230 *              AZIMUTH = 270  TILT = 0 ..
* 231 *
* 232 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 233 *              AZIMUTH = 30 ..
* 234 *
* 235 *              WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 236 *
* 237 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 238 *              AZIMUTH = 90 ..
* 239 *
* 240 *              WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 241 *
* 242 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 243 *              AZIMUTH = 150 ..
* 244 *
* 245 *              WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 246 *
* 247 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 248 *              AZIMUTH = 210 ..
* 249 *
* 250 *              WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 251 *
* 252 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 253 *              AZIMUTH = 270 ..
* 254 *
* 255 *              WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 256 *
* 257 *          E-W    HEIGHT = 9.0  WIDTH = 20.0  CONS = WALL_CON
* 258 *              AZIMUTH = 330 ..
* 259 *
* 260 *              WINDOW HEIGHT = 5.0  WIDTH = 20.0  G-T = G_TYPE1 ..
* 261 *
* 262 *
* 263 * 24HR_OPS_B =SPACE  AREA = 4000.0  VOLUME = 36000.0
* 264 *              ZONE-TYPE = CONDITIONED  PEOPLE-SCHEDULE = PEOPLE_SCD
* 265 *              NUMBER-OF-PEOPLE = 40.0  PEOPLE-HEAT-GAIN = 550.0
* 266 *              EQUIP-SCHEDULE = FULL_ON  EQUIPMENT-KW = 15.0
* 267 *              FLOOR-WEIGHT = 0.1  INF-METHOD = AIR-CHANGE
* 268 *              AIR-CHANGES/HR = 0.5  INF-SCHEDULE = FULL_ON ..
* 269 *
* 270 *          I-W    HEIGHT = 9.0  WIDTH = 145.0  CONS = AIRWALL
* 271 *              NEXT-TO = 24HR_OPS_A ..
* 272 *
* 273 *
* 274 *          END ..
* 275 *          COMPUTE LOADS ..
* 276 *
* 277 *          INPUT SYSTEMS ..

```

SDL PROCESSOR INPUT DATA

3/18/1995 13:26:36 SDL RUN 1

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* 278 *
* 279 *
* 280 *
* 281 * $-----$
* 282 * $ E Z - D O E   S Y S T E M S   I N P U T $
* 283 * $-----$
* 284 *
* 285 * $ GENERAL PROJECT DATA
* 286 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 287 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 288 * LINE-3 * DENVER, CO 80227 *
* 289 *
* 290 * LINE-4 *BUILDING 2065, AF OPS *
* 291 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 292 * ABORT ERRORS ..
* 293 * DIAGNOSTIC WARNINGS ..
* 294 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-H,SS-K,SS-O) ..
* 295 *
* 296 * $ SCHEDULES
* 297 *
* 298 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 299 * FULL_OFF_D =DAY-SCHEDULE (1,24) (1.) ..
* 300 * HEAT_68_D =DAY-SCHEDULE (1,24) (68.) ..
* 301 * COOL_75_D =DAY-SCHEDULE (1,24) (75.) ..
* 302 * COOL_78_D =DAY-SCHEDULE (1,24) (78.) ..
* 303 * HT_AVAIL_D =DAY-SCHEDULE (1,24) (1.) ..
* 304 * FAN_WSB_D =DAY-SCHEDULE (1,6) (0.)
* 305 * (7,16) (1.)
* 306 * (17,24) (0.) ..
* 307 * HT_W_SB_D =DAY-SCHEDULE (1,6) (50.)
* 308 * (7,16) (68.)
* 309 * (17,24) (50.) ..
* 310 * HEAT50_D =DAY-SCHEDULE (1,24) (50.) ..
* 311 * MOA.08_D =DAY-SCHEDULE (1,7) (0.)
* 312 * (8,16) (0.08)
* 313 * (17,24) (0.) ..
* 314 *
* 315 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 316 *
* 317 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 318 *
* 319 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 320 *
* 321 * COOL_75_W =WEEK-SCHEDULE (ALL) COOL_75_D ..
* 322 *
* 323 * COOL_78_W =WEEK-SCHEDULE (ALL) COOL_78_D ..
* 324 *
* 325 * HT_AVAIL_W =WEEK-SCHEDULE (ALL) HT_AVAIL_D ..
* 326 *
* 327 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 328 * (SAT) FULL_OFF_D
* 329 * (SUN) FULL_OFF_D
* 330 * (HOL) FAN_WSB_D ..
* 331 *
* 332 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT_W_SB_D
* 333 * (SAT) HEAT50_D
* 334 * (SUN) HEAT50_D
* 335 * (HOL) HT_W_SB_D ..
* 336 *
* 337 * MOA.08_W =WEEK-SCHEDULE (WD) MOA.08_D
* 338 * (SAT) FULL_OFF_D
* 339 * (SUN) FULL_OFF_D
* 340 * (HOL) MOA.08_D ..
* 341 *
* 342 *
* 343 * $ FULL_ON SCHEDULE
* 344 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 345 *
* 346 * $ FULL OFF SCHEDULE
* 347 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 348 *
* 349 * $ HEATING SCHEDULE
* 350 * HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 351 *
* 352 * COOL_75_Y =SCHEDULE THRU DEC 31 COOL_75_W ..
* 353 *
* 354 * COOL_78_Y =SCHEDULE THRU DEC 31 COOL_78_W ..
* 355 *
* 356 * $ MONTHS HEAT IS AVAIL.
* 357 * HEAT_AVAIL =SCHEDULE THRU MAY 31 HT_AVAIL_W
* 358 * THRU SEP 15 FULL_OFF_W
* 359 * THRU DEC 31 HT_AVAIL_W ..
* 360 *
* 361 * $ FAN SET BACK SCHEDULE
* 362 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 363 *
* 364 * $ HEATING SCHD W SET BACK
* 365 * HT68_WSB =SCHEDULE THRU MAY 15 HT68_WSB_W
* 366 * THRU OCT 1 FULL_OFF_W
* 367 * THRU DEC 31 HT68_WSB_W ..
* 368 *
* 369 * $ FORCED VENTILATION
* 370 * MOA.08_FV =SCHEDULE THRU DEC 31 MOA.08_W ..
* 371 *
* 372 *
* 373 *
* 374 * $ ZONE DESCRIPTION
* 375 *
* 376 * ADMIN =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 377 * HEAT-TEMP-SCH = HT68_WSB ZONE-TYPE = CONDITIONED

```

```

* 378 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 379 *          BASEBOARD-CTRL = THERMOSTATIC
* 380 *          BASEBOARD-RATING = -95079. ASSIGNED-CFM = 5250.
* 381 *          OUTSIDE-AIR-CFM = 420. SIZING-OPTION = FROM-LOADS ..
* 382 *
* 383 * 24HR_OPS_A =ZONE          DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 384 *          HEAT-TEMP-SCH = HEAT 68 ZONE-TYPE = CONDITIONED
* 385 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 386 *          BASEBOARD-CTRL = THERMOSTATIC
* 387 *          BASEBOARD-RATING = -158366. ASSIGNED-CFM = 9660.
* 388 *          OUTSIDE-AIR-CFM = 4637. SIZING-OPTION = FROM-LOADS ..
* 389 *
* 390 * FIREHOUSE =ZONE          DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 391 *          HEAT-TEMP-SCH = HEAT 68 COOL-TEMP-SCH = COOL_75_Y
* 392 *          ZONE-TYPE = CONDITIONED
* 393 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 394 *          BASEBOARD-CTRL = THERMOSTATIC
* 395 *          BASEBOARD-RATING = -117900. ASSIGNED-CFM = 6840.
* 396 *          OUTSIDE-AIR-CFM = 4172. SIZING-OPTION = FROM-LOADS ..
* 397 *
* 398 * TOWER =ZONE              DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 78.0
* 399 *          HEAT-TEMP-SCH = HEAT 68 COOL-TEMP-SCH = COOL_78_Y
* 400 *          ZONE-TYPE = CONDITIONED
* 401 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 402 *          BASEBOARD-CTRL = THERMOSTATIC
* 403 *          BASEBOARD-RATING = -2119. ASSIGNED-CFM = 2415.
* 404 *          SIZING-OPTION = FROM-LOADS ..
* 405 *
* 406 * 24HR_OPS_B =ZONE          DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 407 *          COOL-TEMP-SCH = COOL 75_Y ZONE-TYPE = CONDITIONED
* 408 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 409 *          BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 8200.
* 410 *          SIZING-OPTION = FROM-LOADS ..
* 411 *
* 412 *
* 413 *          $ SYSTEM DESCRIPTION
* 414 *
* 415 * HV_3 =SYSTEM              SYSTEM-TYPE = HVSYS
* 416 *          MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_AVAIL
* 417 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 418 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 419 *          SUPPLY-CFM = 5250. RETURN-CFM = 4830.
* 420 *          RATED-CFM = 5250. MIN-OUTSIDE-AIR = 0.08
* 421 *          FAN-SCHEDULE = FAN W SB SUPPLY-DELTA-T = 2.4
* 422 *          SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 423 *          NIGHT-VENT-DT = 0.0 HEATING-CAPACITY = -56900.
* 424 *          FURNACE-AUX = 0.
* 425 *          ZONE-NAMES = (ADMIN) ..
* 426 *
* 427 * HV_1&2&MU1 =SYSTEM        SYSTEM-TYPE = HVSYS
* 428 *          MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_AVAIL
* 429 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 430 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 431 *          SUPPLY-CFM = 9660. RETURN-CFM = 5023.
* 432 *          RATED-CFM = 9660. MIN-OUTSIDE-AIR = 0.48
* 433 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 434 *          NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 435 *          HEATING-CAPACITY = -466800. FURNACE-AUX = 0.
* 436 *          ZONE-NAMES = (24HR_OPS_A) ..
* 437 *
* 438 * HV_4&MU2 =SYSTEM          SYSTEM-TYPE = HVSYS
* 439 *          MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT_AVAIL
* 440 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 441 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 442 *          SUPPLY-CFM = 6840. RETURN-CFM = 2668.
* 443 *          RATED-CFM = 6840. MIN-OUTSIDE-AIR = 0.61
* 444 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 445 *          NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 446 *          HEATING-CAPACITY = -360300. FURNACE-AUX = 0.
* 447 *          ZONE-NAMES = (FIREHOUSE) ..
* 448 *
* 449 * AC1-7 =SYSTEM             SYSTEM-TYPE = PTAC
* 450 *          MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 451 *          HEATING-SCHEDULE = FULL OFF SUPPLY-CFM = 8200.
* 452 *          RATED-CFM = 8200. FAN-CONTROL = CONSTANT-VOLUME
* 453 *          SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 454 *          NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 455 *          COOLING-CAPACITY = 178000. COOL-SH-CAP = 160500.
* 456 *          COOL-FT-MIN = 0. MIN-HP-T = 0.
* 457 *          HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 458 *          ZONE-NAMES = (24HR_OPS_B) ..
* 459 *
* 460 * AC9 =SYSTEM               SYSTEM-TYPE = PTAC
* 461 *          MAX-SUPPLY-T = 75.0 MIN-SUPPLY-T = 50.0
* 462 *          HEATING-SCHEDULE = FULL OFF SUPPLY-CFM = 2415.
* 463 *          RATED-CFM = 2415. FAN-CONTROL = CONSTANT-VOLUME
* 464 *          SUPPLY-DELTA-T = 0.2 SUPPLY-KW = 0.00007
* 465 *          NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 466 *          COOLING-CAPACITY = 64300. COOL-SH-CAP = 48900.
* 467 *          COOL-FT-MIN = 0. MIN-HP-T = 0.
* 468 *          HP-SUPP-SOURCE = HOT-WATER FURNACE-AUX = 0.
* 469 *          ZONE-NAMES = (TOWER) ..
* 470 *
* 471 * END ..
* 472 * COMPUTE SYSTEMS ..
* 473 *
* 474 * INPUT PLANT ..

```

PDL PROCESSOR INPUT DATA

3/18/1995 13:26:36 PDL RUN 1

```

* 475 *
* 476 *
* 477 *      $-----$
* 478 *      $EZ - DOE PLANTS INPUT $
* 479 *      $-----$
* 480 *
* 481 *      $ GENERAL PROJECT DATA
* 482 *
* 483 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 484 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 485 * LINE-3 * DENVER, CO 80227 *
* 486 *
* 487 * LINE-4 *BUILDING 2065, AF OPS *
* 488 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 489 *
* 490 * ABORT ERRORS ..
* 491 * DIAGNOSTIC WARNINGS ..
* 492 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 493 * ..
* 494 *
* 495 *      $ SCHEDULES
* 496 *
* 497 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 498 *
* 499 *
* 500 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 501 *
* 502 *
* 503 * $ FULL ON SCHEDULE
* 504 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 505 *
* 506 *
* 507 *
* 508 *      $ EQUIPMENT DESCRIPTION
* 509 *
* 510 * B1 =PLANT-EQUIPMENT TYPE = STM-BOILER
* 511 * SIZE = 2. ..
* 512 *
* 513 * PLANT-PARAMETERS BOILER-CONTROL = STANDBY STM-BOILER-HIR = 1.25 ..
* 514 *
* 515 *
* 516 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 517 * ENERGY-RESOURCE RESOURCE = FUEL-OIL ..
* 518 *
* 519 * ENERGY-STORAGE HEAT-STORE-RATE = 2.65 HEAT-SUPPLY-RATE = 2.65
* 520 * HTANK-BASE-T = 195.0 HTANK-T-RANGE = 50.0
* 521 * HEAT-STORE-SCH = FULL_ON ..
* 522 *
* 523 *
* 524 *
* 525 * END ..
* 526 * COMPUTE PLANT ..
* 527 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	
CATEGORY OF USE			
SPACE HEAT	208.36	4,707.61	0.00
SPACE COOL	133.11	0.00	0.00
HVAC AUX	459.80	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	103.24	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1,046.30	0.00	0.00
	-----	-----	-----
TOTAL	1,950.81	4,707.61	0.00

TOTAL SITE ENERGY 6658.57 MBTU 281.8 KBTU/SQFT-YR GROSS-AREA 281.8 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 10566.29 MBTU 447.2 KBTU/SQFT-YR GROSS-AREA 447.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 7.3  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.



MO	UTILITY-	ELECTRICITY	FUEL-OIL
	TOTAL (MBTU)	174.314	950.134
JAN	PEAK (KBTU)	271.716	1916.483
	DY/HR	6/13	5/12
	TOTAL (MBTU)	154.251	746.075
FEB	PEAK (KBTU)	260.700	1610.066
	DY/HR	18/13	14/ 7
	TOTAL (MBTU)	170.203	726.479
MAR	PEAK (KBTU)	262.980	1707.180
	DY/HR	11/13	9/ 7
	TOTAL (MBTU)	158.918	381.120
APR	PEAK (KBTU)	259.170	1217.338
	DY/HR	11/11	1/ 7
	TOTAL (MBTU)	158.778	192.764
MAY	PEAK (KBTU)	269.223	896.030
	DY/HR	9/13	2/ 7
	TOTAL (MBTU)	156.595	43.538
JUN	PEAK (KBTU)	295.166	470.134
	DY/HR	17/13	8/ 6
	TOTAL (MBTU)	172.001	28.291
JUL	PEAK (KBTU)	315.677	376.789
	DY/HR	18/13	25/ 5
	TOTAL (MBTU)	164.684	37.815
AUG	PEAK (KBTU)	298.101	901.061
	DY/HR	9/14	6/24
	TOTAL (MBTU)	155.159	98.509
SEP	PEAK (KBTU)	311.541	771.169
	DY/HR	2/14	24/ 6
	TOTAL (MBTU)	157.992	252.564
OCT	PEAK (KBTU)	258.563	1030.247
	DY/HR	26/13	28/ 7
	TOTAL (MBTU)	159.331	483.114
NOV	PEAK (KBTU)	264.343	1379.622
	DY/HR	29/13	29/ 7
	TOTAL (MBTU)	168.704	767.234
DEC	PEAK (KBTU)	262.438	1653.525
	DY/HR	13/13	28/ 7
	ONE YEAR	1950.930	4707.639
	USE/PEAK	315.677	1916.483

**COMPUTER SIMULATIONS**

BUILDING 4230

**COMPUTER SIMULATIONS**  
BUILDING 4230

BASE RUN

# LDL PROCESSOR INPUT DATA

3/18/1995 16:19:22 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4230 BASE RUN * ..
* 16 *
* 17 * ABORT      ERRORS ..
* 18 * DIAGNOSTIC  WARNINGS ..
* 19 * LOADS-REPORT  VERIFICATION=(LV-A,LV-B,LV-C)
* 20 * SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..
* 21 * BUILDING-LOCATION  LATITUDE = 44.0
* 22 * ALTITUDE = 655.
* 23 * AZIMUTH = -130.
* 24 * TIME-ZONE = 5
* 25 * GROSS-AREA = 10220
* 26 * HOLIDAY = NO
* 27 * SHIELDING-COEF = 0.29
* 28 * X-REF = 0.0
* 29 * Y-REF = 0.0 ..
* 30 * RUN-PERIOD    JAN 1 1994 THRU DEC 31 1994 ..
* 31 *
* 32 *
* 33 *      $ SCHEDULES
* 34 *
* 35 * LIGHTS  =DAY-SCHEDULE (1,2) (1.)
* 36 *          (3,11) (0.5)
* 37 *          (12,13) (0.6)
* 38 *          (14,24) (1.) ..
* 39 *
* 40 * OCCUP  =DAY-SCHEDULE (1,5) (0.)
* 41 *          (6,10) (0.1,0.5,0.9,0.8,0.5)
* 42 *          (11,14) (0.7,0.9,0.8,0.4)
* 43 *          (15,16) (0.3)
* 44 *          (17,18) (0.5,0.9)
* 45 *          (19,20) (0.7,0.2) .

```

\* 46 \* (21,24) (0.) ..  
 \* 47 \*  
 \* 48 \* APPLIANCE =DAY-SCHEDULE (1) (0.)  
 \* 49 \* (2,3) (0.7)  
 \* 50 \* (4,12) (0.02)  
 \* 51 \* (13,15) (0.6)  
 \* 52 \* (16,18) (0.02)  
 \* 53 \* (19,20) (0.7)  
 \* 54 \* (21,24) (0.8) ..  
 \* 55 \*  
 \* 56 \* FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 57 \*  
 \* 58 \* FULL\_OFFD =DAY-SCHEDULE (1,24) (0.) ..  
 \* 59 \*  
 \* 60 \* appliance =DAY-SCHEDULE (1,6) (0.1)  
 \* 61 \* (7,11) (0.2)  
 \* 62 \* (12,14) (0.3)  
 \* 63 \* (15,20) (0.2)  
 \* 64 \* (21,24) (0.1) ..  
 \* 65 \*  
 \* 66 \* lights =DAY-SCHEDULE (1,5) (0.2)  
 \* 67 \* (6) (0.5)  
 \* 68 \* (7,17) (0.9)  
 \* 69 \* (18) (0.8)  
 \* 70 \* (19,20) (0.7)  
 \* 71 \* (21,24) (0.2) ..  
 \* 72 \*  
 \* 73 \* W&D\_ON\_D =DAY-SCHEDULE (1,2) (0.2,0.1)  
 \* 74 \* (3,4) (0.)  
 \* 75 \* (5) (0.1)  
 \* 76 \* (6,9) (0.3)  
 \* 77 \* (10,11) (0.2)  
 \* 78 \* (12,15) (0.3)  
 \* 79 \* (16) (0.4)  
 \* 80 \* (17,18) (0.6)  
 \* 81 \* (19,20) (0.8,1.)  
 \* 82 \* (21,22) (0.8)  
 \* 83 \* (23,24) (0.6,0.4) ..  
 \* 84 \*  
 \* 85 \*  
 \* 86 \* PEOPLE =WEEK-SCHEDULE (ALL) OCCUP ..  
 \* 87 \*  
 \* 88 \* LIGHTS\_WK =WEEK-SCHEDULE (ALL) lights ..  
 \* 89 \*  
 \* 90 \* APPLI\_WK =WEEK-SCHEDULE (ALL) appliance ..  
 \* 91 \*  
 \* 92 \* CND\_WK =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 93 \*  
 \* 94 \* FULL\_OFFW =WEEK-SCHEDULE (ALL) FULL\_OFFD ..  
 \* 95 \*

\* 96 \* W&D\_ON\_W =WEEK-SCHEDULE (ALL) W&D\_ON\_D ..  
 \* 97 \*  
 \* 98 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 99 \*  
 \* 100 \*  
 \* 101 \* \$ FULL\_ON SCHEDULE  
 \* 102 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 103 \*  
 \* 104 \* \$ LOADS OCCUPANCY SCHED  
 \* 105 \* OCCUPANCY =SCHEDULE THRU DEC 31 PEOPLE ..  
 \* 106 \*  
 \* 107 \* \$ LIGHTING SCHEDULE  
 \* 108 \* LIGHTS\_ON =SCHEDULE THRU DEC 31 LIGHTS\_WK ..  
 \* 109 \*  
 \* 110 \* \$ APPLIANCE SCHEDULE  
 \* 111 \* APPLI\_ON =SCHEDULE THRU DEC 31 APPLI\_WK ..  
 \* 112 \*  
 \* 113 \* \$ COND VENTIL SCHED  
 \* 114 \* CND\_SCHED =SCHEDULE THRU MAR 1 FULL\_OFFW  
 \* 115 \*           THRU NOV 30 CND\_WK  
 \* 116 \*           THRU DEC 31 FULL\_OFFW ..  
 \* 117 \*  
 \* 118 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFFW ..  
 \* 119 \*  
 \* 120 \* W&D\_ON =SCHEDULE THRU DEC 31 W&D\_ON\_W ..  
 \* 121 \*  
 \* 122 \*  
 \* 123 \*  
 \* 124 \*           \$ CONSTRUCTION TYPES  
 \* 125 \*  
 \* 126 \*  
 \* 127 \*  
 \* 128 \*  
 \* 129 \* \$ DOOR CONSTRUCTION  
 \* 130 \* DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 \* 131 \* FLOOR =CONSTRUCTION U-VALUE = 0.100  
 \* 132 \*           ABSORPTANCE = 1.000  
 \* 133 \*           ROUGHNESS = 1 ..  
 \* 134 \* ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
 \* 135 \* EXWALL =CONSTRUCTION U-VALUE = 0.200  
 \* 136 \*           ABSORPTANCE = 0.750 ..  
 \* 137 \* INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
 \* 138 \*  
 \* 139 \* GTYPE\_1 =GLASS-TYPE SHADING-COEF = 0.400  
 \* 140 \*           PANES = 1  
 \* 141 \*           GLASS-CONDUCTANCE = 1.130 ..  
 \* 142 \* GTYPE\_2 =GLASS-TYPE SHADING-COEF = 0.300  
 \* 143 \*           PANES = 1  
 \* 144 \*           GLASS-CONDUCTANCE = 0.790 ..  
 \* 145 \* GTYPE\_3 =GLASS-TYPE SHADING-COEF = 0.400

\* 146 \* PANES = 1  
 \* 147 \* GLASS-CONDUCTANCE = 0.360 ..  
 \* 148 \*  
 \* 149 \*  
 \* 150 \*  
 \* 151 \*  
 \* 152 \* \$ SPACE DESCRIPTION  
 \* 153 \*  
 \* 154 \* LAUNDRY =SPACE AREA = 3060.0 VOLUME = 27540.0  
 \* 155 \* AZIMUTH = 180 ZONE-TYPE = CONDITIONED  
 \* 156 \* PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 15.0  
 \* 157 \* PEOPLE-HEAT-GAIN = 550.0 LIGHTING-KW = 5.0  
 \* 158 \* LIGHTING-SCHEDULE = FULL\_ON EQUIP-SCHEDULE = W&D\_ON  
 \* 159 \* EQUIPMENT-KW = 44.1 EQUIP-SENSIBLE = 0.05  
 \* 160 \* SOURCE-SCHEDULE = FULL\_ON SOURCE-TYPE = GAS  
 \* 161 \* SOURCE-BTU/HR = 263874.0 SOURCE-SENSIBLE = 0.01  
 \* 162 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 163 \* INF-SCHEDULE = FULL\_ON ..  
 \* 164 \*  
 \* 165 \* I-W HEIGHT = 9.0 WIDTH = 34.0 CONS = INWALL  
 \* 166 \* AZIMUTH = 180 NEXT-TO = RETAIL ..  
 \* 167 \*  
 \* 168 \* E-W HEIGHT = 9.0 WIDTH = 56.0 CONS = EXWALL  
 \* 169 \* AZIMUTH = -90 ..  
 \* 170 \*  
 \* 171 \* DOOR HEIGHT = 9.0 WIDTH = 3.0 CONS = DOORCON ..  
 \* 172 \*  
 \* 173 \* WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 174 \* MULTIPLIER = 8.0 ..  
 \* 175 \*  
 \* 176 \* E-W HEIGHT = 9.0 WIDTH = 34.0 CONS = EXWALL  
 \* 177 \* AZIMUTH = -180 ..  
 \* 178 \*  
 \* 179 \* DOOR HEIGHT = 9.0 WIDTH = 5.0 CONS = DOORCON ..  
 \* 180 \*  
 \* 181 \* I-W HEIGHT = 9.0 WIDTH = 56.0 CONS = INWALL  
 \* 182 \* AZIMUTH = 90 NEXT-TO = RETAIL ..  
 \* 183 \*  
 \* 184 \* ROOF HEIGHT = 34.0 WIDTH = 56.0 CONS = ROOFCON  
 \* 185 \* AZIMUTH = 180 TILT = 0 ..  
 \* 186 \*  
 \* 187 \* U-W HEIGHT = 34.0 WIDTH = 56.0 CONS = FLOOR  
 \* 188 \* AZIMUTH = 180 ..  
 \* 189 \*  
 \* 190 \*  
 \* 191 \* RETAIL =SPACE AREA = 7160.0 VOLUME = 64440.0  
 \* 192 \* AZIMUTH = 180 ZONE-TYPE = CONDITIONED  
 \* 193 \* PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 10.0  
 \* 194 \* PEOPLE-HEAT-GAIN = 550.0 LIGHTING-KW = 12.0  
 \* 195 \* LIGHTING-SCHEDULE = FULL\_ON

\* 196 \*           EQUIP-SCHEDULE = APPLI\_ON EQUIPMENT-KW = 128.0  
 \* 197 \*           EQUIP-SENSIBLE = 0.1 INF-METHOD = AIR-CHANGE  
 \* 198 \*           AIR-CHANGES/HR = 1.0 INF-SCHEDULE = FULL\_ON ..  
 \* 199 \*  
 \* 200 \*       E-W   HEIGHT = 9.0 WIDTH = 118.0 CONS = EXWALL  
 \* 201 \*           AZIMUTH = 180 ..  
 \* 202 \*  
 \* 203 \*       WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 \* 204 \*           MULTIPLIER = 8.0 ..  
 \* 205 \*  
 \* 206 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 \* 207 \*           MULTIPLIER = 2.0 ..  
 \* 208 \*  
 \* 209 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 \* 210 \*           MULTIPLIER = 2.0 ..  
 \* 211 \*  
 \* 212 \*       E-W   HEIGHT = 9.0 WIDTH = 23.0 CONS = EXWALL  
 \* 213 \*           AZIMUTH = -90 ..  
 \* 214 \*  
 \* 215 \*       WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1 ..  
 \* 216 \*  
 \* 217 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON ..  
 \* 218 \*  
 \* 219 \*       I-W   HEIGHT = 9.0 WIDTH = 34.0 CONS = INWALL  
 \* 220 \*           AZIMUTH = 180 NEXT-TO = LAUNDRY ..  
 \* 221 \*  
 \* 222 \*       I-W   HEIGHT = 9.0 WIDTH = 56.0 CONS = INWALL  
 \* 223 \*           AZIMUTH = 90 NEXT-TO = LAUNDRY ..  
 \* 224 \*  
 \* 225 \*       E-W   HEIGHT = 9.0 WIDTH = 84.0 CONS = EXWALL  
 \* 226 \*           AZIMUTH = 180 ..  
 \* 227 \*  
 \* 228 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 \* 229 \*           MULTIPLIER = 4.0 ..  
 \* 230 \*  
 \* 231 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 \* 232 \*           MULTIPLIER = 4.0 ..  
 \* 233 \*  
 \* 234 \*       DOOR   HEIGHT = 8.0 WIDTH = 8.0 CONS = DOORCON ..  
 \* 235 \*  
 \* 236 \*       DOOR   HEIGHT = 8.0 WIDTH = 8.0 CONS = DOORCON ..  
 \* 237 \*  
 \* 238 \*       E-W   HEIGHT = 9.0 WIDTH = 79.0 CONS = EXWALL  
 \* 239 \*           AZIMUTH = 90 ..  
 \* 240 \*  
 \* 241 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON ..  
 \* 242 \*  
 \* 243 \*       DOOR   HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON ..  
 \* 244 \*  
 \* 245 \*       ROOF   HEIGHT = 79.0 WIDTH = 101.0 CONS = ROOFCON



\* 246 \*           AZIMUTH = 180 TILT = 0 ..  
 \* 247 \*  
 \* 248 \*       U-W   HEIGHT = 79.0 WIDTH = 101.0 CONS = FLOOR  
 \* 249 \*           AZIMUTH = 180 ..  
 \* 250 \*  
 \* 251 \*  
 \* 252 \* END ..  
 \* 253 \* COMPUTE LOADS ..  
 \* 254 \*  
 \* 255 \* INPUT SYSTEMS ..

# SDL PROCESSOR INPUT DATA

3/18/1995 16:19:22 SDL RUN 1

\* 256 \*  
 \* 257 \*  
 \* 258 \*       \$-----\$  
 \* 259 \*       \$EZ-DOE SYSTEMS INPUT\$  
 \* 260 \*       \$-----\$  
 \* 261 \*  
 \* 262 \*       \$ GENERAL PROJECT DATA  
 \* 263 \*  
 \* 264 \* TITLE LINE-1 \* EMC ENGINEERS INC. \*  
 \* 265 \*   LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 \* 266 \*   LINE-3 \* DENVER, CO 80227 \*  
 \* 267 \*  
 \* 268 \*   LINE-4 \*BUILDING 4230 BASE RUN       \*..  
 \* 269 \* ABORT       ERRORS ..  
 \* 270 \* DIAGNOSTIC   WARNINGS ..  
 \* 271 \* SYSTEMS-REPORT VERIFICATION=(SV-A,SV-B)  
 \* 272 \*       SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-E,SS-F,SS-G,  
 \* 273 \*       SS-H,SS-I,SS-J,SS-K,SS-L,SS-M,SS-N,  
 \* 274 \*       SS-O) ..  
 \* 275 \*  
 \* 276 \*       \$ SCHEDULES  
 \* 277 \*  
 \* 278 \* D\_FULL   =DAY-SCHEDULE (1,24) (1.) ..  
 \* 279 \* D\_OFF   =DAY-SCHEDULE (1,24) (0.) ..  
 \* 280 \* HEAT\_68\_D =DAY-SCHEDULE (1,24) (73.) ..  
 \* 281 \* COOL\_75\_D =DAY-SCHEDULE (1,24) (75.) ..  
 \* 282 \*  
 \* 283 \* W\_FULL   =WEEK-SCHEDULE (ALL) D\_FULL ..  
 \* 284 \*  
 \* 285 \* W\_OFF   =WEEK-SCHEDULE (ALL) D\_OFF ..  
 \* 286 \*  
 \* 287 \* HEAT\_68\_W =WEEK-SCHEDULE (ALL) HEAT\_68\_D ..

```

* 288 *
* 289 * COOL_75_W =WEEK-SCHEDULE (ALL) COOL_75_D ..
* 290 *
* 291 *
* 292 * FULL_ON =SCHEDULE THRU DEC 31 W_FULL ..
* 293 *
* 294 * FULL_OFF =SCHEDULE THRU DEC 31 W_OFF ..
* 295 *
* 296 * HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 297 *
* 298 * COOL_75 =SCHEDULE THRU DEC 31 COOL_75_W ..
* 299 *
* 300 *
* 301 *
* 302 *          $ ZONE DESCRIPTION
* 303 *
* 304 * LAUNDRY =ZONE  DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 305 *          HEAT-TEMP-SCH = HEAT_68 COOL-TEMP-SCH = COOL_75
* 306 *          ZONE-TYPE = CONDITIONED
* 307 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 308 *          ASSIGNED-CFM = 3620. OUTSIDE-AIR-CFM = 100.
* 309 *          SIZING-OPTION = FROM-LOADS ..
* 310 *
* 311 * RETAIL =ZONE  DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 312 *          HEAT-TEMP-SCH = HEAT_68 COOL-TEMP-SCH = COOL_75
* 313 *          ZONE-TYPE = CONDITIONED
* 314 *          THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
* 315 *          ASSIGNED-CFM = 5755. OUTSIDE-AIR-CFM = 800.
* 316 *          SIZING-OPTION = FROM-LOADS MIN-CFM-RATIO = 0.34 ..
* 317 *
* 318 *
* 319 *          $ SYSTEM DESCRIPTION
* 320 *
* 321 * AH-1 =SYSTEM  SYSTEM-TYPE = SZRH
* 322 *          MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 50.0
* 323 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 324 *          ECONO-LOW-LIMIT = 55.0 OA-CONTROL = FIXED
* 325 *          SUPPLY-CFM = 2290. RETURN-CFM = 1690.
* 326 *          RATED-CFM = 2290. MIN-OUTSIDE-AIR = 0.35
* 327 *          SUPPLY-STATIC = 3.0 SUPPLY-EFF = 0.88
* 328 *          NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 329 *          MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 231000.
* 330 *          HEATING-CAPACITY = -367700. FURNACE-AUX = 0.
* 331 *          PREHEAT-SOURCE = HOT-WATER
* 332 *          ZONE-NAMES = (RETAIL) ..
* 333 *
* 334 * AH-2 =SYSTEM  SYSTEM-TYPE = SZRH
* 335 *          MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 50.0
* 336 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 337 *          ECONO-LOW-LIMIT = 55.0 OA-CONTROL = FIXED

```

\* 338 \*           SUPPLY-CFM = 3620. RETURN-CFM = 3520.  
 \* 339 \*           RATED-CFM = 3620. MIN-OUTSIDE-AIR = 0.33  
 \* 340 \*           SUPPLY-STATIC = 3.0 SUPPLY-EFF = 0.88  
 \* 341 \*           NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 342 \*           MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 114000.  
 \* 343 \*           HEATING-CAPACITY = -160000. FURNACE-AUX = 0.  
 \* 344 \*           PREHEAT-SOURCE = HOT-WATER  
 \* 345 \*           ZONE-NAMES = (LAUNDRY) ..  
 \* 346 \*  
 \* 347 \* END ..  
 \* 348 \* COMPUTE SYSTEMS ..  
 \* 349 \*  
 \* 350 \* INPUT PLANT ..

# PDL PROCESSOR INPUT DATA

3/18/1995 16:19:22 PDL RUN 1

\* 351 \*  
 \* 352 \*  
 \* 353 \*           \$-----\$  
 \* 354 \*           \$EZ-DOE PLANTS INPUT\$  
 \* 355 \*           \$-----\$  
 \* 356 \*  
 \* 357 \*           \$ GENERAL PROJECT DATA  
 \* 358 \*  
 \* 359 \* TITLE LINE-1 \* EMC ENGINEERS INC. \*  
 \* 360 \*   LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 \* 361 \*   LINE-3 \* DENVER, CO 80227 \*  
 \* 362 \*  
 \* 363 \*   LINE-4 \*BUILDING 4230 BASE RUN           \*..  
 \* 364 \*  
 \* 365 \* ABORT        ERRORS ..  
 \* 366 \* DIAGNOSTIC   WARNINGS ..  
 \* 367 \* PLANT-REPORT   VERIFICATION=(PV-A)  
 \* 368 \*           SUMMARY=(PS-A,PS-B,PS-D,PS-H,PS-I,BEPS) ..  
 \* 369 \*  
 \* 370 \*           \$ SCHEDULES  
 \* 371 \*  
 \* 372 \* DAY\_ON   =DAY-SCHEDULE (1,7) (0.)  
 \* 373 \*           (8,18) (1.)  
 \* 374 \*           (19,24) (0.) ..  
 \* 375 \*  
 \* 376 \*  
 \* 377 \* FULL\_ON   =WEEK-SCHEDULE (ALL) DAY\_ON ..  
 \* 378 \*  
 \* 379 \*

```

* 380 * $ heating plant schedule
* 381 * heating =SCHEDULE THRU DEC 31 FULL_ON ..
* 382 *
* 383 *
* 384 *
* 385 *      $ EQUIPMENT DESCRIPTION
* 386 *
* 387 * BOILER1 =PLANT-EQUIPMENT TYPE = HW-BOILER
* 388 *      SIZE = 0.4 ..
* 389 *
* 390 * COND =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR
* 391 *      SIZE = 0.2 INSTALLED-NUMBER = 2
* 392 *      MAX-NUMBER-AVAIL = 2 ..
* 393 *
* 394 * PLANT-PARAMETERS BOILER-FUEL = NATURAL-GAS MAKEUP-WTR-T = 50.
* 395 *      STM-BOILER-HIR = 0.76 CHILLER-CONTROL = STANDBY
* 396 *      OPEN-REC-COND-TYPE = AIR HERM-REC-COND-TYPE = AIR
* 397 *      COMP-TO-TWR-WTR = 2.77 CCIRC-HEAD = 100.0
* 398 *      HCIRC-HEAD = 40.0 ..
* 399 *
* 400 *
* 401 * PART-LOAD-RATIO TYPE = HW-BOILER
* 402 *      MIN-RATIO = 0.2500 MAX-RATIO = 1.0000
* 403 *      OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..
* 404 *
* 405 * ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
* 406 * ENERGY-RESOURCE RESOURCE = NATURAL-GAS ..
* 407 *
* 408 * ENERGY-STORAGE HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51
* 409 *      HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6
* 410 *      HEAT-STORE-SCH = heating ..
* 411 *
* 412 *
* 413 *
* 414 * END ..
* 415 * COMPUTE PLANT ..
* 416 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	40.21	1077.67
SPACE COOL	87.96	0.00
HVAC AUX	114.70	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	508.23	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	1159.21	2311.82
	<hr/>	<hr/>
TOTAL	1910.31	3389.49

TOTAL SITE ENERGY 5299.52 MBTU 518.5 KBTU/SQFT-YR GROSS-AREA 518.5 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 9125.90 MBTU 892.9 KBTU/SQFT-YR GROSS-AREA 892.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.5

PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.7

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY- ELECTRICITY	NATURAL-GAS
JAN	TOTAL(MBTU)	160.096 444.928
	PEAK(KBTU)	320.797 763.874
	DY/HR	31/20 24/ 7
FEB	TOTAL(MBTU)	144.588 350.322
	PEAK(KBTU)	320.797 718.212
	DY/HR	28/20 4/10
MAR	TOTAL(MBTU)	159.959 372.534
	PEAK(KBTU)	320.797 687.692
	DY/HR	31/20 26/10
APR	TOTAL(MBTU)	154.081 281.694
	PEAK(KBTU)	321.108 564.793
	DY/HR	30/20 1/ 5
MAY	TOTAL(MBTU)	160.197 242.567
	PEAK(KBTU)	340.494 541.491
	DY/HR	31/20 3/ 2
JUN	TOTAL(MBTU)	159.957 194.96
	PEAK(KBTU)	356.984 347.767
	DY/HR	28/20 7/ 4
JUL	TOTAL(MBTU)	171.81 198.131
	PEAK(KBTU)	363.045 325.904
	DY/HR	18/20 25/ 5
AUG	TOTAL(MBTU)	167.894 198.243
	PEAK(KBTU)	354.955 328.401
	DY/HR	9/20 25/ 6
SEP	TOTAL(MBTU)	159.176 204.604
	PEAK(KBTU)	357.724 397.936
	DY/HR	4/20 23/ 4
OCT	TOTAL(MBTU)	158.987 245.38
	PEAK(KBTU)	323.825 542.948
	DY/HR	17/20 25/ 5
NOV	TOTAL(MBTU)	153.784 290.321
	PEAK(KBTU)	320.797 605.86
	DY/HR	30/20 26/16

DEC	TOTAL(MBTU)	159.793	365.514
	PEAK(KBTU)	320.797	719.331
	DY/HR	31/20	3/4
	ONE YEAR	1910.323	3389.199
	USE/PEAK	363.045	763.874

**COMPUTER SIMULATIONS**  
**BUILDING 4230**

**RUN 2 - ECONOMIZER**



# INPUT LOADS ..

```

$-----$
$ E Z - D O E   L O A D S   I N P U T $
$-----$

```

## \$ GENERAL PROJECT DATA

```

TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
LINE-3 *      DENVER,      CO      80227      *

LINE-4 *BUILDING 4230 (24HR OP SO NO SET BACK) *
LINE-5 *MODEL WITH ECONOMIZER      * ..

```

```

ABORT      ERRORS ..
DIAGNOSTIC WARNINGS ..
LOADS-REPORT VERIFICATION=(LV-A,LV-B,LV-C)
BUILDING-LOCATION SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..
LATITUDE = 44.0
ALTITUDE = 655.
AZIMUTH = -130.
TIME-ZONE = 5
GROSS-AREA = 10220
HOLIDAY = NO
SHIELDING-COEF = 0.29
X-REF = 0.0
Y-REF = 0.0 ..
RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..

```

## \$ SCHEDULES

```

LIGHTS      =DAY-SCHEDULE (1,2) (1.)
              (3,11) (0.5)
              (12,13) (0.6)
              (14,24) (1.) ..

OCCUP        =DAY-SCHEDULE (1,5) (0.)
              (6,10) (0.1,0.5,0.9,0.8,0.5)
              (11,14) (0.7,0.9,0.8,0.4)
              (15,16) (0.3)
              (17,18) (0.5,0.9)
              (19,20) (0.7,0.2)
              (21,24) (0.) ..

APPLIANCE    =DAY-SCHEDULE (1) (0.)
              (2,3) (0.7)
              (4,12) (0.02)
              (13,15) (0.6)
              (16,18) (0.02)
              (19,20) (0.7)
              (21,24) (0.8) ..

FULL_ON_D    =DAY-SCHEDULE (1,24) (1.) ..

FULL_OFFD    =DAY-SCHEDULE (1,24) (0.) ..

appliance    =DAY-SCHEDULE (1,6) (0.1)
              (7,11) (0.2)
              (12,14) (0.3)
              (15,20) (0.2)
              (21,24) (0.1) ..

lights       =DAY-SCHEDULE (1,5) (0.2)
              (6) (0.5)
              (7,17) (0.9)
              (18) (0.8)
              (19,20) (0.7)
              (21,24) (0.2) ..

W&D_ON_D     =DAY-SCHEDULE (1,2) (0.2,0.1)
              (3,4) (0.)
              (5) (0.1)
              (6,9) (0.3)
              (10,11) (0.2)
              (12,15) (0.3)
              (16) (0.4)
              (17,18) (0.6)
              (19,20) (0.8,1.)
              (21,22) (0.8)
              (23,24) (0.6,0.4) ..

```

```

PEOPLE       =WEEK-SCHEDULE (ALL) OCCUP ..
LIGHTS_WK    =WEEK-SCHEDULE (ALL) lights ..
APPLI_WK     =WEEK-SCHEDULE (ALL) appliance ..
CND_WK       =WEEK-SCHEDULE (ALL) FULL_ON_D ..
FULL_OFFW    =WEEK-SCHEDULE (ALL) FULL_OFFD ..
W&D_ON_W     =WEEK-SCHEDULE (ALL) W&D_ON_D ..
FULL_ON_W    =WEEK-SCHEDULE (ALL) FULL_ON_D ..

```

```

$ FULL_ON SCHEDULE
FULL_ON      =SCHEDULE THRU DEC 31 FULL_ON_W ..

```

```

$ LOADS OCCUPANCY SCHED
OCCUPANCY    =SCHEDULE THRU DEC 31 PEOPLE ..

```

```

$ LIGHTING SCHEDULE

```

LIGHTS\_ON =SCHEDULE THRU DEC 31 LIGHTS\_WK ..  
 \$ APPLIANCE SCHEDULE  
 APPLI\_ON =SCHEDULE THRU DEC 31 APPLI\_WK ..  
 \$ COND VENTIL SCHED  
 CND\_SCHED =SCHEDULE THRU MAR 1 FULL\_OFFW  
 THRU NOV 30 CND\_WK  
 THRU DEC 31 FULL\_OFFW ..  
 FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFFW ..  
 W&D\_ON =SCHEDULE THRU DEC 31 W&D\_ON\_W ..

# \$ CONSTRUCTION TYPES

\$ DOOR CONSTRUCTION  
 DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 FLOOR =CONSTRUCTION U-VALUE = 0.100  
 ABSORPTANCE = 1.000  
 ROUGHNESS = 1 ..  
 ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
 EXWALL =CONSTRUCTION U-VALUE = 0.200  
 ABSORPTANCE = 0.750 ..  
 INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
 GTYPE\_1 =GLASS-TYPE SHADING-COEF = 0.400  
 PANES = 1  
 GLASS-CONDUCTANCE = 1.130 ..  
 GTYPE\_2 =GLASS-TYPE SHADING-COEF = 0.300  
 PANES = 1  
 GLASS-CONDUCTANCE = 0.750 ..  
 GTYPE\_3 =GLASS-TYPE SHADING-COEF = 0.400  
 PANES = 1  
 GLASS-CONDUCTANCE = 0.360 ..

# \$ SPACE DESCRIPTION

LAUNDRY =SPACE AREA = 3060.0 VOLUME = 27540.0  
 AZIMUTH = 180 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 15.0  
 PEOPLE-HEAT-GAIN = 550.0 LIGHTING-KW = 5.0  
 LIGHTING-SCHEDULE = FULL ON EQUIP-SCHEDULE = W&D\_ON  
 EQUIPMENT-KW = 44.1 EQUIP-SENSIBLE = 0.05  
 SOURCE-SCHEDULE = FULL ON SOURCE-TYPE = GAS  
 SOURCE-BTU/HR = 263874.0 SOURCE-SENSIBLE = 0.01  
 INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 INF-SCHEDULE = FULL\_ON ..  
 I-W HEIGHT = 9.0 WIDTH = 34.0 CONS = INWALL  
 AZIMUTH = 180 NEXT-TO = RETAIL ..  
 E-W HEIGHT = 9.0 WIDTH = 56.0 CONS = EXWALL  
 AZIMUTH = -90 ..  
 DOOR HEIGHT = 9.0 WIDTH = 3.0 CONS = DOORCON ..  
 WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 MULTIPLIER = 8.0 ..  
 E-W HEIGHT = 9.0 WIDTH = 34.0 CONS = EXWALL  
 AZIMUTH = -180 ..  
 DOOR HEIGHT = 9.0 WIDTH = 5.0 CONS = DOORCON ..  
 I-W HEIGHT = 9.0 WIDTH = 56.0 CONS = INWALL  
 AZIMUTH = 90 NEXT-TO = RETAIL ..  
 ROOF HEIGHT = 34.0 WIDTH = 56.0 CONS = ROOFCON  
 AZIMUTH = 180 TILT = 0 ..  
 U-W HEIGHT = 34.0 WIDTH = 56.0 CONS = FLOOR  
 AZIMUTH = 180 ..  
 RETAIL =SPACE AREA = 7160.0 VOLUME = 64440.0  
 AZIMUTH = 180 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 10.0  
 PEOPLE-HEAT-GAIN = 550.0 LIGHTING-KW = 12.0  
 LIGHTING-SCHEDULE = FULL ON  
 EQUIP-SCHEDULE = APPLI\_ON EQUIPMENT-KW = 128.0  
 EQUIP-SENSIBLE = 0.1 INF-METHOD = AIR-CHANGE  
 AIR-CHANGES/HR = 1.0 INF-SCHEDULE = FULL\_ON ..  
 E-W HEIGHT = 9.0 WIDTH = 118.0 CONS = EXWALL  
 AZIMUTH = 180 ..  
 WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 MULTIPLIER = 8.0 ..  
 DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 2.0 ..  
 DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 2.0 ..  
 E-W HEIGHT = 9.0 WIDTH = 23.0 CONS = EXWALL  
 AZIMUTH = -90 ..  
 WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1 ..

```

DOOR  HEIGHT = 8.0  WIDTH = 3.0  CONS = DOORCON ..
I-W    HEIGHT = 9.0  WIDTH = 34.0  CONS = INWALL
      AZIMUTH = 180  NEXT-TO = LAUNDRY ..
I-W    HEIGHT = 9.0  WIDTH = 56.0  CONS = INWALL
      AZIMUTH = 90  NEXT-TO = LAUNDRY ..
E-W    HEIGHT = 9.0  WIDTH = 84.0  CONS = EXWALL
      AZIMUTH = 180 ..
DOOR  HEIGHT = 8.0  WIDTH = 3.0  CONS = DOORCON
      MULTIPLIER = 4.0 ..
DOOR  HEIGHT = 8.0  WIDTH = 3.0  CONS = DOORCON
      MULTIPLIER = 4.0 ..
DOOR  HEIGHT = 8.0  WIDTH = 8.0  CONS = DOORCON ..
DOOR  HEIGHT = 8.0  WIDTH = 8.0  CONS = DOORCON ..
E-W    HEIGHT = 9.0  WIDTH = 79.0  CONS = EXWALL
      AZIMUTH = 90 ..
DOOR  HEIGHT = 8.0  WIDTH = 3.0  CONS = DOORCON ..
DOOR  HEIGHT = 8.0  WIDTH = 3.0  CONS = DOORCON ..
ROOF   HEIGHT = 79.0  WIDTH = 101.0  CONS = ROOFCON
      AZIMUTH = 180  TILT = 0 ..
U-W    HEIGHT = 79.0  WIDTH = 101.0  CONS = FLOOR
      AZIMUTH = 180 ..

```

```

END ..
COMPUTE LOADS ..
INPUT SYSTEMS ..

```

```

$-----$
$ E Z - D O E   S Y S T E M S   I N P U T $
$-----$

```

#### \$ GENERAL PROJECT DATA

```

TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
      LINE-3 *      DENVER,      CO      80227      *
      LINE-4 *BUILDING 4230 (24HR OP SO NO SET BACK) *
      LINE-5 *MODEL WITH ECONOMIZER      * ..
ABORT   ERRORS ..
DIAGNOSTIC WARNINGS ..
SYSTEMS-REPORT VERIFICATION=(SV-A,SV-B)
      SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-E,SS-F,SS-G,
      SS-H,SS-I,SS-J,SS-K,SS-L,SS-M,SS-N,
      SS-O) ..

```

#### \$ SCHEDULES

```

D_FULL  =DAY-SCHEDULE (1,24) (1.) ..
D_OFF   =DAY-SCHEDULE (1,24) (0.) ..
HEAT_68_D =DAY-SCHEDULE (1,24) (73.) ..
COOL_75_D =DAY-SCHEDULE (1,24) (75.) ..
W_FULL  =WEEK-SCHEDULE (ALL) D_FULL ..
W_OFF   =WEEK-SCHEDULE (ALL) D_OFF ..
HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
COOL_75_W =WEEK-SCHEDULE (ALL) COOL_75_D ..
FULL_ON  =SCHEDULE THRU DEC 31 W_FULL ..
FULL_OFF =SCHEDULE THRU DEC 31 W_OFF ..
HEAT_68  =SCHEDULE THRU DEC 31 HEAT_68_W ..
COOL_75  =SCHEDULE THRU DEC 31 COOL_75_W ..

```

#### \$ ZONE DESCRIPTION

```

LAUNDRY  =ZONE  DESIGN-HEAT-T = 68.0  DESIGN-COOL-T = 75.0
      HEAT-TEMP-SCH = HEAT_68  COOL-TEMP-SCH = COOL_75
      ZONE-TYPE = CONDITIONED
      THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
      ASSIGNED-CFM = 3620.  OUTSIDE-AIR-CFM = 100.
      SIZING-OPTION = FROM-LOADS ..
RETAIL   =ZONE  DESIGN-HEAT-T = 68.0  DESIGN-COOL-T = 75.0
      HEAT-TEMP-SCH = HEAT_68  COOL-TEMP-SCH = COOL_75
      ZONE-TYPE = CONDITIONED
      THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
      ASSIGNED-CFM = 5755.  OUTSIDE-AIR-CFM = 800.
      SIZING-OPTION = FROM-LOADS  MIN-CFM-RATIO = 0.34 ..

```

#### \$ SYSTEM DESCRIPTION

```

AH-1     =SYSTEM  SYSTEM-TYPE = SZRH
      MAX-SUPPLY-T = 120.0  MIN-SUPPLY-T = 50.0
      MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0

```

```

ECONO-LOW-LIMIT = 55.0 SUPPLY-CFM = 2290.
RETURN-CFM = 1690. RATED-CFM = 2290.
MIN-OUTSIDE-AIR = 0.35 SUPPLY-STATIC = 3.0
SUPPLY-EFF = 0.88 NIGHT-CYCLE-CTRL = STAY-OFF
NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
COOLING-CAPACITY = 231000.
HEATING-CAPACITY = -367700. FURNACE-AUX = 0.
PREHEAT-SOURCE = HOT-WATER
ZONE-NAMES = (RETAIL) ..

AH-2      =SYSTEM  SYSTEM-TYPE = SZRH
            MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 50.0
            MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
            ECONO-LOW-LIMIT = 55.0 SUPPLY-CFM = 3620.
            RETURN-CFM = 3520. RATED-CFM = 3620.
            MIN-OUTSIDE-AIR = 0.33 SUPPLY-STATIC = 3.0
            SUPPLY-EFF = 0.88 NIGHT-CYCLE-CTRL = STAY-OFF
            NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
            COOLING-CAPACITY = 114000.
            HEATING-CAPACITY = -160000. FURNACE-AUX = 0.
            PREHEAT-SOURCE = HOT-WATER
            ZONE-NAMES = (LAUNDRY) ..

END ..
COMPUTE SYSTEMS ..

INPUT PLANT ..

$-----$
$ E Z - D O E P L A N T S I N P U T $
$-----$

$ GENERAL PROJECT DATA

TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
LINE-2 *EZDOR - ELITE SOFTWARE DEVELOPMENT INC*
LINE-3 *      DENVER,      CO      80227      *

LINE-4 *BUILDING 4230 (24HR OP SO NO SET BACK) *
LINE-5 *MODEL WITH ECONOMIZER      * ..

ABORT      ERRORS      ..
DIAGNOSTIC WARNINGS ..
PLANT-REPORT VERIFICATION=(PV-A)
SUMMARY=(PS-A,PS-B,PS-D,PS-H,PS-I,BEPS) ..

$ SCHEDULES

DAY_ON      =DAY-SCHEDULE (1,7) (0.)
            (8,18) (1.)
            (19,24) (0.) ..

FULL_ON      =WEEK-SCHEDULE (ALL) DAY_ON ..

$ heating plant schedule
heating      =SCHEDULE THRU DEC 31 FULL_ON ..

$ EQUIPMENT DESCRIPTION

BOILER1      =PLANT-EQUIPMENT TYPE = HW-BOILER
            SIZE = 0.4 ..

COND          =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR
            SIZE = 0.2 INSTALLED-NUMBER = 2
            MAX-NUMBER-AVAIL = 2 ..

PLANT-PARAMETERS
BOILER-FUEL = NATURAL-GAS MAKEUP-WTR-T = 50.
STM-BOILER-HIR = 0.76 CHILLER-CONTROL = STANDBY
OPEN-REC-COND-TYPE = AIR HERM-REC-COND-TYPE = AIR
COMP-TO-TWR-WTR = 2.77 CCIRC-HEAD = 100.0
HCIRC-HEAD = 40.0 ..

PART-LOAD-RATIO TYPE = HW-BOILER
MIN-RATIO      = 0.2500 MAX-RATIO      = 1.0000
OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..

ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
ENERGY-RESOURCE RESOURCE = NATURAL-GAS ..

ENERGY-STORAGE HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51
HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6
HEAT-STORE-SCH = heating ..

END ..
COMPUTE PLANT ..
STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	40.30	1,079.31
SPACE COOL	76.86	0.00
HVAC AUX	114.71	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	508.23	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	1,159.21	2,311.82
	-----	-----
TOTAL	1,899.32	3,391.13

TOTAL SITE ENERGY 5290.17 MBTU 517.6 KBTU/SQFT-YR GROSS-AREA 517.6 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 9094.52 MBTU 889.9 KBTU/SQFT-YR GROSS-AREA 889.9 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.5  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.7

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	NATURAL-GAS
JAN	TOTAL (MBTU)	160.096	444.928
	PEAK (KBTU)	320.797	763.874
	DY/HR	31/20	24/ 7
FEB	TOTAL (MBTU)	144.588	350.322
	PEAK (KBTU)	320.797	718.212
	DY/HR	28/20	4/10
MAR	TOTAL (MBTU)	159.959	372.534
	PEAK (KBTU)	320.797	687.692
	DY/HR	31/20	26/10
APR	TOTAL (MBTU)	153.728	281.927
	PEAK (KBTU)	321.056	564.793
	DY/HR	30/20	1/ 5
MAY	TOTAL (MBTU)	159.006	243.282
	PEAK (KBTU)	340.492	541.491
	DY/HR	31/20	3/ 2
JUN	TOTAL (MBTU)	157.929	195.304
	PEAK (KBTU)	356.982	347.784
	DY/HR	28/20	7/ 4
JUL	TOTAL (MBTU)	170.244	198.139
	PEAK (KBTU)	363.045	325.912
	DY/HR	18/20	25/ 5
AUG	TOTAL (MBTU)	165.244	198.373
	PEAK (KBTU)	354.950	436.415
	DY/HR	9/20	6/24
SEP	TOTAL (MBTU)	157.347	204.718
	PEAK (KBTU)	357.724	397.936
	DY/HR	4/20	23/ 4
OCT	TOTAL (MBTU)	157.741	245.484
	PEAK (KBTU)	320.797	542.958
	DY/HR	25/20	25/ 5
NOV	TOTAL (MBTU)	153.726	290.321
	PEAK (KBTU)	320.797	605.860
	DY/HR	30/20	26/16
DEC	TOTAL (MBTU)	159.717	365.514
	PEAK (KBTU)	320.797	719.331
	DY/HR	31/20	3/ 4
ONE YEAR		1899.325	3390.846
USE/PEAK		363.045	763.874

**COMPUTER SIMULATIONS**  
BUILDING 4230

RUN 3 - DDC

INPUT LOADS ..

\$-----\$  
\$ E Z - D O E L O A D S I N P U T \$  
\$-----\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 \* EMC ENGINEERS INC. \*  
LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
LINE-3 \* DENVER, CO 80227 \*  
  
LINE-4 \*BUILDING 4230 (24HR OP SO NO SET BACK) \*  
LINE-5 \*MODEL WITH ECONOMIZER & DDC \* ..

ABORT ERRORS ..  
DIAGNOSTIC WARNINGS ..  
LOADS-REPORT VERIFICATION=(LV-A,LV-B,LV-C)  
SUMMARY=(LS-A,LS-B,LS-C,LS-D,LS-E,LS-F,LS-K) ..  
BUILDING-LOCATION LATITUDE = 44.0  
ALTITUDE = 655.  
AZIMUTH = -130.  
TIME-ZONE = 5  
GROSS-AREA = 10220  
HOLIDAY = NO  
SHIELDING-COEF = 0.29  
X-REF = 0.0  
Y-REF = 0.0 ..  
RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..

\$ SCHEDULES

LIGHTS =DAY-SCHEDULE (1,2) (1.)  
(3,11) (0.5)  
(12,13) (0.6)  
(14,24) (1.) ..

OCCUP =DAY-SCHEDULE (1,5) (0.)  
(6,10) (0.1,0.5,0.9,0.8,0.5)  
(11,14) (0.7,0.9,0.8,0.4)  
(15,16) (0.3)  
(17,18) (0.5,0.9)  
(19,20) (0.7,0.2)  
(21,24) (0.) ..

APPLIANCE =DAY-SCHEDULE (1) (0.)  
(2,3) (0.7)  
(4,12) (0.02)  
(13,15) (0.6)  
(16,18) (0.02)  
(19,20) (0.7)  
(21,24) (0.8) ..

FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..

FULL\_OFFD =DAY-SCHEDULE (1,24) (0.) ..

appliance =DAY-SCHEDULE (1,6) (0.1)  
(7,11) (0.2)  
(12,14) (0.3)  
(15,20) (0.2)  
(21,24) (0.1) ..

lights =DAY-SCHEDULE (1,5) (0.2)  
(6) (0.5)  
(7,17) (0.9)  
(18) (0.8)  
(19,20) (0.7)  
(21,24) (0.2) ..

W&D\_ON\_D =DAY-SCHEDULE (1,2) (0.2,0.1)  
(3,4) (0.)  
(5) (0.1)  
(6,9) (0.3)  
(10,11) (0.2)  
(12,15) (0.3)  
(16) (0.4)  
(17,18) (0.6)  
(19,20) (0.8,1.)  
(21,22) (0.8)  
(23,24) (0.6,0.4) ..

PEOPLE =WEEK-SCHEDULE (ALL) OCCUP ..

LIGHTS\_WK =WEEK-SCHEDULE (ALL) lights ..

APPLI\_WK =WEEK-SCHEDULE (ALL) appliance ..

CND\_WK =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..

FULL\_OFFW =WEEK-SCHEDULE (ALL) FULL\_OFFD ..

W&D\_ON\_W =WEEK-SCHEDULE (ALL) W&D\_ON\_D ..

FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..

\$ FULL\_ON SCHEDULE  
FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..

\$ LOADS OCCUPANCY SCHED  
OCCUPANCY =SCHEDULE THRU DEC 31 PEOPLE ..

\$ LIGHTING SCHEDULE



LIGHTS\_ON =SCHEDULE THRU DEC 31 LIGHTS\_WK ..  
 \$ APPLIANCE SCHEDULE  
 APPLI\_ON =SCHEDULE THRU DEC 31 APPLI\_WK ..  
 \$ COND VENTIL SCHED  
 CND\_SCHED =SCHEDULE THRU MAR 1 FULL\_OFFW  
 THRU NOV 30 CND\_WK  
 THRU DEC 31 FULL\_OFFW ..  
 FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFFW ..  
 W&D\_ON =SCHEDULE THRU DEC 31 W&D\_ON\_W ..

# \$ CONSTRUCTION TYPES

\$ DOOR CONSTRUCTION  
 DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 FLOOR =CONSTRUCTION U-VALUE = 0.100  
 ABSORPTANCE = 1.000  
 ROUGHNESS = 1 ..  
 ROOFCON =CONSTRUCTION U-VALUE = 0.050 ..  
 EXWALL =CONSTRUCTION U-VALUE = 0.200  
 ABSORPTANCE = 0.750 ..  
 INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
 GTYPE\_1 =GLASS-TYPE SHADING-COEF = 0.400  
 PANES = 1  
 GLASS-CONDUCTANCE = 1.130 ..  
 GTYPE\_2 =GLASS-TYPE SHADING-COEF = 0.300  
 PANES = 1  
 GLASS-CONDUCTANCE = 0.790 ..  
 GTYPE\_3 =GLASS-TYPE SHADING-COEF = 0.400  
 PANES = 1  
 GLASS-CONDUCTANCE = 0.360 ..

# \$ SPACE DESCRIPTION

LAUNDRY =SPACE AREA = 3060.0 VOLUME = 27540.0  
 AZIMUTH = 180 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 15.0  
 PEOPLE-HEAT-GAIN = 550.0 LIGHTING-KW = 5.0  
 LIGHTING-SCHEDULE = FULL\_ON EQUIP-SCHEDULE = W&D\_ON  
 EQUIPMENT-KW = 44.1 EQUIP-SENSIBLE = 0.05  
 SOURCE-SCHEDULE = FULL\_ON SOURCE-TYPE = GAS  
 SOURCE-BTU/HR = 263874.0 SOURCE-SENSIBLE = 0.01  
 INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 INF-SCHEDULE = FULL\_ON ..  
 I-W HEIGHT = 9.0 WIDTH = 34.0 CONS = INWALL  
 AZIMUTH = 180 NEXT-TO = RETAIL ..  
 E-W HEIGHT = 9.0 WIDTH = 56.0 CONS = EXWALL  
 AZIMUTH = -90 ..  
 DOOR HEIGHT = 9.0 WIDTH = 3.0 CONS = DOORCON ..  
 WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 MULTIPLIER = 8.0 ..  
 E-W HEIGHT = 9.0 WIDTH = 34.0 CONS = EXWALL  
 AZIMUTH = -180 ..  
 DOOR HEIGHT = 9.0 WIDTH = 5.0 CONS = DOORCON ..  
 I-W HEIGHT = 9.0 WIDTH = 56.0 CONS = INWALL  
 AZIMUTH = 90 NEXT-TO = RETAIL ..  
 ROOF HEIGHT = 34.0 WIDTH = 56.0 CONS = ROOFCON  
 AZIMUTH = 180 TILT = 0 ..  
 U-W HEIGHT = 34.0 WIDTH = 56.0 CONS = FLOOR  
 AZIMUTH = 180 ..  
 RETAIL =SPACE AREA = 7160.0 VOLUME = 64440.0  
 AZIMUTH = 180 ZONE-TYPE = CONDITIONED  
 PEOPLE-SCHEDULE = OCCUPANCY NUMBER-OF-PEOPLE = 10.0  
 PEOPLE-HEAT-GAIN = 550.0 LIGHTING-KW = 12.0  
 LIGHTING-SCHEDULE = FULL\_ON  
 EQUIP-SCHEDULE = APPLI\_ON EQUIPMENT-KW = 128.0  
 EQUIP-SENSIBLE = 0.1 INF-METHOD = AIR-CHANGE  
 AIR-CHANGES/HR = 1.0 INF-SCHEDULE = FULL\_ON ..  
 E-W HEIGHT = 9.0 WIDTH = 118.0 CONS = EXWALL  
 AZIMUTH = 180 ..  
 WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1  
 MULTIPLIER = 8.0 ..  
 DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 2.0 ..  
 DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 2.0 ..  
 E-W HEIGHT = 9.0 WIDTH = 23.0 CONS = EXWALL  
 AZIMUTH = -90 ..  
 WINDOW HEIGHT = 5.0 WIDTH = 4.0 G-T = GTYPE\_1 ..

```

DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON ..
I-W HEIGHT = 9.0 WIDTH = 34.0 CONS = INWALL
  AZIMUTH = 180 NEXT-TO = LAUNDRY ..
I-W HEIGHT = 9.0 WIDTH = 56.0 CONS = INWALL
  AZIMUTH = 90 NEXT-TO = LAUNDRY ..
E-W HEIGHT = 9.0 WIDTH = 84.0 CONS = EXWALL
  AZIMUTH = 180 ..
DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON
  MULTIPLIER = 4.0 ..
DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON
  MULTIPLIER = 4.0 ..
DOOR HEIGHT = 8.0 WIDTH = 8.0 CONS = DOORCON ..
DOOR HEIGHT = 8.0 WIDTH = 8.0 CONS = DOORCON ..
E-W HEIGHT = 9.0 WIDTH = 79.0 CONS = EXWALL
  AZIMUTH = 90 ..
DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON ..
DOOR HEIGHT = 8.0 WIDTH = 3.0 CONS = DOORCON ..
ROOF HEIGHT = 79.0 WIDTH = 101.0 CONS = ROOFCON
  AZIMUTH = 180 TILT = 0 ..
U-W HEIGHT = 79.0 WIDTH = 101.0 CONS = FLOOR
  AZIMUTH = 180 ..

```

```

END ..
COMPUTE LOADS ..
INPUT SYSTEMS ..

```

```

$-----$
$ E Z - D O E   S Y S T E M S   I N P U T $
$-----$

```

#### \$ GENERAL PROJECT DATA

```

TITLE LINE-1 * EMC ENGINEERS INC. *
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
      LINE-3 * DENVER, CO 80227 *
      LINE-4 *BUILDING 4230 (24HR OP SO NO SET BACK) *
      LINE-5 *MODEL WITH ECONOMIZER & DDC * ..
ABORT ERRORS ..
DIAGNOSTIC WARNINGS ..
SYSTEMS-REPORT VERIFICATION=(SV-A,SV-B)
SUMMARY=(SS-A,SS-B,SS-C,SS-D,SS-E,SS-F,SS-G,
SS-H,SS-I,SS-J,SS-K,SS-L,SS-M,SS-N,
SS-O) ..

```

#### \$ SCHEDULES

```

D_FULL =DAY-SCHEDULE (1,24) (1.) ..
D_OFF =DAY-SCHEDULE (1,24) (0.) ..
HEAT_68_D =DAY-SCHEDULE (1,24) (68.) ..
COOL_75_D =DAY-SCHEDULE (1,24) (78.) ..
W_FULL =WEEK-SCHEDULE (ALL) D_FULL ..
W_OFF =WEEK-SCHEDULE (ALL) D_OFF ..
HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
COOL_75_W =WEEK-SCHEDULE (ALL) COOL_75_D ..
FULL_ON =SCHEDULE THRU DEC 31 W_FULL ..
FULL_OFF =SCHEDULE THRU DEC 31 W_OFF ..
HEAT_68 =SCHEDULE THRU DEC 31 HEAT_68_W ..
COOL_75 =SCHEDULE THRU DEC 31 COOL_75_W ..

```

#### \$ ZONE DESCRIPTION

```

LAUNDRY =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
HEAT-TEMP-SCH = HEAT_68 COOL-TEMP-SCH = COOL_75
ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
ASSIGNED-CFM = 3620. OUTSIDE-AIR-CFM = 100.
SIZING-OPTION = FROM-LOADS ..
RETAIL =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
HEAT-TEMP-SCH = HEAT_68 COOL-TEMP-SCH = COOL_75
ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL THROTTLING-RANGE = 1.0
ASSIGNED-CFM = 5755. OUTSIDE-AIR-CFM = 800.
SIZING-OPTION = FROM-LOADS MIN-CFM-RATIO = 0.34 ..

```

#### \$ SYSTEM DESCRIPTION

```

AH-1 =SYSTEM SYSTEM-TYPE = SZRH
MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 50.0
MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0

```

```

ECONO-LOW-LIMIT = 55.0 SUPPLY-CFM = 2290.
RETURN-CFM = 1690. RATED-CFM = 2290.
MIN-OUTSIDE-AIR = 0.35 SUPPLY-STATIC = 3.0
SUPPLY-EFF = 0.88 NIGHT-CYCLE-CTRL = STAY-OFF
NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
COOLING-CAPACITY = 231000.
HEATING-CAPACITY = -367700. FURNACE-AUX = 0.
PREHEAT-SOURCE = HOT-WATER
ZONE-NAMES = (RETAIL) ..

AH-2      =SYSTEM  SYSTEM-TYPE = SZRH
MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 50.0
MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
ECONO-LOW-LIMIT = 55.0 SUPPLY-CFM = 3620.
RETURN-CFM = 3520. RATED-CFM = 3620.
MIN-OUTSIDE-AIR = 0.33 SUPPLY-STATIC = 3.0
SUPPLY-EFF = 0.88 NIGHT-CYCLE-CTRL = STAY-OFF
NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
COOLING-CAPACITY = 114000.
HEATING-CAPACITY = -160000. FURNACE-AUX = 0.
PREHEAT-SOURCE = HOT-WATER
ZONE-NAMES = (LAUNDRY) ..

END ..
COMPUTE SYSTEMS ..

INPUT PLANT ..

$-----$
$ E Z - D O E   P L A N T S   I N P U T $
$-----$

$ GENERAL PROJECT DATA

TITLE  LINE-1 *   EMC      ENGINEERS      INC.      *
LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
LINE-3 *   DENVER,      CO      80227      *

LINE-4 *BUILDING 4230 (24HR OP SO NO SET BACK) *
LINE-5 *MODEL WITH ECONOMIZER & DDC      * ..

ABORT      ERRORS ..
DIAGNOSTIC WARNINGS ..
PLANT-REPORT VERIFICATION=(PV-A)
SUMMARY=(PS-A,PS-B,PS-D,PS-H,PS-I,BEPS) ..

$ SCHEDULES

DAY_ON      =DAY-SCHEDULE (1,7) (0.)
              (8,18) (1.)
              (19,24) (0.) ..

FULL_ON      =WEEK-SCHEDULE (ALL) DAY_ON ..

$ heating plant schedule
heating      =SCHEDULE THRU DEC 31 FULL_ON ..

$ EQUIPMENT DESCRIPTION

BOILER1      =PLANT-EQUIPMENT TYPE = HW-BOILER
              SIZE = 0.4 ..

COND          =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR
              SIZE = 0.2 INSTALLED-NUMBER = 2
              MAX-NUMBER-AVAIL = 2 ..

PLANT-PARAMETERS BOILER-FUEL = NATURAL-GAS MAKEUP-WTR-T = 50.
STM-BOILER-HIR = 0.76 CHILLER-CONTROL = STANDBY
OPEN-REC-COND-TYPE = AIR HERM-REC-COND-TYPE = AIR
COMP-TO-TWR-WTR = 2.77 CCIRC-HEAD = 100.0
HCIRC-HEAD = 40.0 ..

PART-LOAD-RATIO TYPE = HW-BOILER
MIN-RATIO      = 0.2500 MAX-RATIO      = 1.0000
OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.0220 ..

ENERGY-RESOURCE RESOURCE = ELECTRICITY ..
ENERGY-RESOURCE RESOURCE = NATURAL-GAS ..

ENERGY-STORAGE HEAT-STORE-RATE = 1.51 HEAT-SUPPLY-RATE = 1.51
HTANK-BASE-T = 144.0 HTANK-T-RANGE = 15.6
HEAT-STORE-SCH = heating ..

END ..
COMPUTE PLANT ..
STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	NATURAL-GAS
CATEGORY OF USE		
SPACE HEAT	33.56	848.00
SPACE COOL	57.11	0.00
HVAC AUX	110.16	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	508.23	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	1,159.21	2,311.82
	-----	-----
TOTAL	1,868.27	3,159.82

TOTAL SITE ENERGY 5027.81 MBTU 492.0 KBTU/SQFT-YR GROSS-AREA 492.0 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 8769.98 MBTU 858.1 KBTU/SQFT-YR GROSS-AREA 858.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.1  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.4

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	NATURAL-GAS
	TOTAL (MBTU)	159.505	416.059
JAN	PEAK (KBTU)	320.115	763.874
	DY/HR	31/20	6/17
	TOTAL (MBTU)	143.958	325.720
FEB	PEAK (KBTU)	320.115	672.626
	DY/HR	28/20	4/10
	TOTAL (MBTU)	159.068	343.437
MAR	PEAK (KBTU)	320.115	640.482
	DY/HR	31/20	26/10
	TOTAL (MBTU)	151.440	252.865
APR	PEAK (KBTU)	320.115	526.948
	DY/HR	3/20	1/ 5
	TOTAL (MBTU)	155.291	221.025
MAY	PEAK (KBTU)	331.898	478.692
	DY/HR	31/20	3/ 2
	TOTAL (MBTU)	153.519	190.819
JUN	PEAK (KBTU)	351.475	312.607
	DY/HR	28/20	7/14
	TOTAL (MBTU)	165.545	196.536
JUL	PEAK (KBTU)	359.359	300.127
	DY/HR	17/20	31/15
	TOTAL (MBTU)	161.228	196.724
AUG	PEAK (KBTU)	349.488	414.470
	DY/HR	9/20	6/24
	TOTAL (MBTU)	153.330	193.657
SEP	PEAK (KBTU)	353.715	349.559
	DY/HR	4/20	23/ 6
	TOTAL (MBTU)	154.893	221.765
OCT	PEAK (KBTU)	320.638	469.628
	DY/HR	23/20	25/ 5
	TOTAL (MBTU)	151.799	262.435
NOV	PEAK (KBTU)	320.115	554.302
	DY/HR	26/20	26/16
	TOTAL (MBTU)	158.702	338.493
DEC	PEAK (KBTU)	320.115	673.581
	DY/HR	31/20	3/ 4
	ONE YEAR	1868.278	3159.536
	USE/PEAK	359.359	763.874

**COMPUTER SIMULATIONS**

BUILDING 4305

**COMPUTER SIMULATIONS**  
BUILDING 4305

BASE RUN

# LDL PROCESSOR INPUT DATA

3/18/1995 16:32:24 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 16 * LINE-5 *BASE MODEL * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 * X-REF = 0.0
* 23 * Y-REF = 0.0 ..
* 24 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 *      $ SCHEDULES
* 28 *
* 29 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.1)
* 34 *      (6,7) (0.35)
* 35 *      (8,9) (0.5,0.6)
* 36 *      (10,11) (0.75)
* 37 *      (12) (0.5)
* 38 *      (13,14) (0.75)
* 39 *      (15) (0.5)
* 40 *      (16,18) (0.4)
* 41 *      (19,20) (0.3,0.23)
* 42 *      (21,24) (0.1) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 *      (7,19) (0.07)

```



\* 46 \* (20,24) (0.23) ..  
 \* 47 \*  
 \* 48 \* PEOPLE\_D =DAY-SCHEDULE (1,5) (0.)  
 \* 49 \* (6,7) (0.1,0.5)  
 \* 50 \* (8,11) (1.)  
 \* 51 \* (12) (0.8)  
 \* 52 \* (13,16) (1.)  
 \* 53 \* (17,20) (0.5)  
 \* 54 \* (21,24) (0.) ..  
 \* 55 \*  
 \* 56 \* EQUIP\_ON\_D =DAY-SCHEDULE (1,5) (0.05)  
 \* 57 \* (6,7) (0.1,0.2)  
 \* 58 \* (8,9) (0.3)  
 \* 59 \* (10,11) (0.4,0.7)  
 \* 60 \* (12,13) (0.4)  
 \* 61 \* (14,15) (0.8)  
 \* 62 \* (16,18) (0.7,0.3,0.1)  
 \* 63 \* (19,24) (0.05) ..  
 \* 64 \*  
 \* 65 \* SHOP\_INF\_D =DAY-SCHEDULE (1,7) (0.1)  
 \* 66 \* (8) (1.)  
 \* 67 \* (9,16) (0.1)  
 \* 68 \* (17) (1.)  
 \* 69 \* (18,24) (0.1) ..  
 \* 70 \*  
 \* 71 \* DHW\_D =DAY-SCHEDULE (1,5) (0.)  
 \* 72 \* (6,10) (0.1,0.3,0.4,0.5,0.15)  
 \* 73 \* (11) (0.25)  
 \* 74 \* (12,13) (0.7)  
 \* 75 \* (14,15) (0.5)  
 \* 76 \* (16,20) (0.8,1.,0.4,0.3,0.1)  
 \* 77 \* (21,24) (0.) ..  
 \* 78 \*  
 \* 79 \*  
 \* 80 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 81 \*  
 \* 82 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 83 \*  
 \* 84 \* LIGHT\_ON\_W =WEEK-SCHEDULE (WD) LIGHT\_ON\_D  
 \* 85 \* (WEH) LT\_ON\_WKND ..  
 \* 86 \*  
 \* 87 \* PEOPLE\_W =WEEK-SCHEDULE (WD) PEOPLE\_D  
 \* 88 \* (WEH) FULL\_OFF\_D ..  
 \* 89 \*  
 \* 90 \* EQUIP\_W =WEEK-SCHEDULE (WD) EQUIP\_ON\_D  
 \* 91 \* (WEH) FULL\_OFF\_D ..  
 \* 92 \*  
 \* 93 \* SHOP\_IFL\_W =WEEK-SCHEDULE (WD) SHOP\_INF\_D  
 \* 94 \* (WEH) FULL\_OFF\_D ..  
 \* 95 \*

\* 96 \* DHW\_W =WEEK-SCHEDULE (WD) DHW\_D  
 \* 97 \* (WEH) FULL\_OFF\_D ..  
 \* 98 \*  
 \* 99 \*  
 \* 100 \* \$ FULL ON SCHEDULE  
 \* 101 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 102 \*  
 \* 103 \* \$ FULL OFF SCHEDULE  
 \* 104 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 105 \*  
 \* 106 \* \$ LIGHTING SCHEDULE  
 \* 107 \* LIGHT\_SCHD =SCHEDULE THRU DEC 31 LIGHT\_ON\_W ..  
 \* 108 \*  
 \* 109 \* \$ OCCUPANCY SCHEDULE  
 \* 110 \* PEOPLE\_SCH =SCHEDULE THRU DEC 31 PEOPLE\_W ..  
 \* 111 \*  
 \* 112 \* \$ EQUIPMENT SCHEDULE  
 \* 113 \* EQUIP\_SCHD =SCHEDULE THRU DEC 31 EQUIP\_W ..  
 \* 114 \*  
 \* 115 \* \$ SHOP INFILTRATION SCHED  
 \* 116 \* SHOP\_INFIL =SCHEDULE THRU DEC 31 SHOP\_IFL\_W ..  
 \* 117 \*  
 \* 118 \* \$ HOURS POOL IS HEATED  
 \* 119 \* POOL\_HEAT =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 120 \*  
 \* 121 \* \$ DHW SCHEDULE  
 \* 122 \* DHW\_SCHD =SCHEDULE THRU DEC 31 DHW\_W ..  
 \* 123 \*  
 \* 124 \* POOL\_VENT =SCHEDULE THRU MAY 15 FULL\_OFF\_W  
 \* 125 \* THRU OCT 1 FULL\_ON\_W  
 \* 126 \* THRU DEC 31 FULL\_OFF\_W ..  
 \* 127 \*  
 \* 128 \*  
 \* 129 \*  
 \* 130 \* \$ CONSTRUCTION TYPES  
 \* 131 \*  
 \* 132 \*  
 \* 133 \*  
 \* 134 \* FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..  
 \* 135 \*  
 \* 136 \* \$ ADMINISTRATION ROOF CONSTRUCTION  
 \* 137 \* ADMROOF =CONSTRUCTION LAYERS = ASHR-17 ..  
 \* 138 \*  
 \* 139 \* \$ ROOF CONSTRUCTION  
 \* 140 \* ROOFCON =CONSTRUCTION U-VALUE = 0.060 ..  
 \* 141 \* WALLCON =CONSTRUCTION U-VALUE = 0.055 ..  
 \* 142 \* INWALL =CONSTRUCTION U-VALUE = 0.500 ..  
 \* 143 \* DOORCON =CONSTRUCTION U-VALUE = 0.400 ..  
 \* 144 \* GLSSWALL =CONSTRUCTION U-VALUE = 1.130 ..  
 \* 145 \*

\* 146 \* G\_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000  
 \* 147 \* PANES = 1  
 \* 148 \* GLASS-CONDUCTANCE = 1.130 ..  
 \* 149 \*  
 \* 150 \*  
 \* 151 \*  
 \* 152 \*  
 \* 153 \* \$ SPACE DESCRIPTION  
 \* 154 \*  
 \* 155 \* GYM =SPACE AREA = 10518.0 VOLUME = 399684.0  
 \* 156 \* ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 \* 157 \* NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 1350.0  
 \* 158 \* LIGHTING-TYPE = INCAND LIGHTING-KW = 6.9  
 \* 159 \* LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 160 \* EQUIP-SCHEDULE = EQUIP\_SCHD INF-METHOD = AIR-CHANGE  
 \* 161 \* AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..  
 \* 162 \*  
 \* 163 \* ROOF HEIGHT = 96.0 WIDTH = 112.0 CONS = ROOFCON  
 \* 164 \* TILT = 0 ..  
 \* 165 \*  
 \* 166 \* U-W HEIGHT = 96.0 WIDTH = 112.0 CONS = FLOORCON ..  
 \* 167 \*  
 \* 168 \* E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON  
 \* 169 \* AZIMUTH = 0 ..  
 \* 170 \*  
 \* 171 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 172 \* MULTIPLIER = 2.0 ..  
 \* 173 \*  
 \* 174 \* E-W HEIGHT = 38.0 WIDTH = 96.0 CONS = WALLCON  
 \* 175 \* AZIMUTH = 90 ..  
 \* 176 \*  
 \* 177 \* E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON  
 \* 178 \* AZIMUTH = 180 ..  
 \* 179 \*  
 \* 180 \*  
 \* 181 \* RCQT\_&\_WT =SPACE AREA = 2974.0 VOLUME = 47584.0  
 \* 182 \* ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 \* 183 \* NUMBER-OF-PEOPLE = 40.0 PEOPLE-HEAT-GAIN = 1350.0  
 \* 184 \* LIGHTING-TYPE = INCAND LIGHTING-KW = 2.3  
 \* 185 \* LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 186 \* EQUIP-SCHEDULE = EQUIP\_SCHD INF-METHOD = AIR-CHANGE  
 \* 187 \* AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..  
 \* 188 \*  
 \* 189 \* ROOF HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON  
 \* 190 \* TILT = 0 ..  
 \* 191 \*  
 \* 192 \* U-W HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON ..  
 \* 193 \*  
 \* 194 \*  
 \* 195 \* LOBBY&OFFC =SPACE AREA = 10428.0 VOLUME = 83424.0

\* 196 \*            ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 \* 197 \*            NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 800.0  
 \* 198 \*            LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.0  
 \* 199 \*            LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 200 \*            EQUIP-SCHEDULE = EQUIP\_SCHD  
 \* 201 \*            SOURCE-SCHEDULE = DHW\_SCHD SOURCE-TYPE = HOT-WATER  
 \* 202 \*            SOURCE-BTU/HR = 16000.0 SOURCE-SENSIBLE = 0.3  
 \* 203 \*            SOURCE-LATENT = 0.1 INF-METHOD = AIR-CHANGE  
 \* 204 \*            AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..  
 \* 205 \*  
 \* 206 \*            ROOF    HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON  
 \* 207 \*                    TILT = 0 ..  
 \* 208 \*  
 \* 209 \*            U-W    HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON ..  
 \* 210 \*  
 \* 211 \*            E-W    HEIGHT = 10.0 WIDTH = 197.1 CONS = WALLCON  
 \* 212 \*                    AZIMUTH = 0 ..  
 \* 213 \*  
 \* 214 \*            DOOR    HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 215 \*                    MULTIPLIER = 7.0 ..  
 \* 216 \*  
 \* 217 \*            E-W    HEIGHT = 10.0 WIDTH = 52.0 CONS = WALLCON  
 \* 218 \*                    AZIMUTH = 90 ..  
 \* 219 \*  
 \* 220 \*            E-W    HEIGHT = 10.0 WIDTH = 80.8 CONS = WALLCON  
 \* 221 \*                    AZIMUTH = 180 ..  
 \* 222 \*  
 \* 223 \*            DOOR    HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 \* 224 \*                    MULTIPLIER = 4.0 ..  
 \* 225 \*  
 \* 226 \*            E-W    HEIGHT = 10.0 WIDTH = 70.4 CONS = WALLCON  
 \* 227 \*                    AZIMUTH = 270 ..  
 \* 228 \*  
 \* 229 \*            I-W    HEIGHT = 10.0 WIDTH = 114.0 CONS = GLSSWALL  
 \* 230 \*                    AZIMUTH = 270 NEXT-TO = POOL ..  
 \* 231 \*  
 \* 232 \*  
 \* 233 \* POOL        =SPACE    AREA = 8237.0 VOLUME = 296532.0  
 \* 234 \*                    TEMPERATURE = (80.) ZONE-TYPE = CONDITIONED  
 \* 235 \*                    PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 236 \*                    PEOPLE-HEAT-GAIN = 800.0 LIGHTING-TYPE = INCAND  
 \* 237 \*                    LIGHTING-KW = 3.0 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 238 \*                    EQUIP-SCHEDULE = POOL\_HEAT EQUIPMENT-KW = 46.65  
 \* 239 \*                    EQUIP-SENSIBLE = 0.5 FLOOR-WEIGHT = 200.  
 \* 240 \*                    FURNITURE-TYPE = HEAVY FURN-WEIGHT = 15.  
 \* 241 \*                    INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 2.0  
 \* 242 \*                    INF-SCHEDULE = POOL\_VENT ..  
 \* 243 \*  
 \* 244 \*            ROOF    HEIGHT = 108.7 WIDTH = 109.8 CONS = ROOFCON  
 \* 245 \*                    TILT = 0 ..

```

* 246 *
* 247 *      U-W   HEIGHT = 108.7 WIDTH = 109.8 CONS = FLOORCON ..
* 248 *
* 249 *      E-W   HEIGHT = 36.0 WIDTH = 109.8 CONS = WALLCON
* 250 *      AZIMUTH = 180 ..
* 251 *
* 252 *      E-W   HEIGHT = 36.0 WIDTH = 108.7 CONS = WALLCON
* 253 *      AZIMUTH = 270 ..
* 254 *
* 255 *      DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON
* 256 *      MULTIPLIER = 2.0 ..
* 257 *
* 258 *
* 259 * END ..
* 260 * COMPUTE LOADS ..
* 261 *
* 262 * INPUT SYSTEMS ..

```

# SDL PROCESSOR INPUT DATA

3/18/1995 16:32:24 SDL RUN 1

```

* 263 *
* 264 *
* 265 *      $-----$
* 266 *      $EZ-DOE SYSTEMS INPUT$
* 267 *      $-----$
* 268 *
* 269 *      $ GENERAL PROJECT DATA
* 270 *
* 271 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 272 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 273 * LINE-3 * DENVER, CO 80227 *
* 274 *
* 275 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 276 * LINE-5 *BASE MODEL *..
* 277 * ABORT ERRORS ..
* 278 * DIAGNOSTIC WARNINGS ..
* 279 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-H,SS-K)
* 280 * HOURLY-DATA-SAVE = YES ..
* 281 *
* 282 *      $ SCHEDULES
* 283 *
* 284 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 285 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 286 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (74.) ..
* 287 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (80.) ..

```

\* 288 \* FAN\_WSB\_D =DAY-SCHEDULE (1,5) (0.)  
 \* 289 \*                   (6,19) (1.)  
 \* 290 \*                   (20,24) (0.) ..  
 \* 291 \* HT68\_WSB\_D =DAY-SCHEDULE (1,5) (50.)  
 \* 292 \*                   (6,19) (74.)  
 \* 293 \*                   (20,24) (50.) ..  
 \* 294 \* HEAT\_50\_D =DAY-SCHEDULE (1,24) (50.) ..  
 \* 295 \*  
 \* 296 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 297 \*  
 \* 298 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 299 \*  
 \* 300 \* HEAT1\_ON\_W =WEEK-SCHEDULE (ALL) HEAT1\_ON\_D ..  
 \* 301 \*  
 \* 302 \* HEAT2\_ON\_W =WEEK-SCHEDULE (ALL) HEAT2\_ON\_D ..  
 \* 303 \*  
 \* 304 \* FAN\_WSB\_W =WEEK-SCHEDULE (WD) FAN\_WSB\_D  
 \* 305 \*                   (SAT) FULL\_OFF\_D  
 \* 306 \*                   (SUN) FULL\_OFF\_D  
 \* 307 \*                   (HOL) FAN\_WSB\_D ..  
 \* 308 \*  
 \* 309 \* HT68\_WSB\_W =WEEK-SCHEDULE (WD) HT68\_WSB\_D  
 \* 310 \*                   (SAT) FULL\_OFF\_D  
 \* 311 \*                   (SUN) FULL\_OFF\_D  
 \* 312 \*                   (HOL) HT68\_WSB\_D ..  
 \* 313 \*  
 \* 314 \*  
 \* 315 \* \$ FULL ON SCHEDULE  
 \* 316 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 317 \*  
 \* 318 \* \$ FULL OFF SCHEDULE  
 \* 319 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 320 \*  
 \* 321 \* \$ HEAT SCHEDULE, 68 DEG  
 \* 322 \* HEAT68\_ON =SCHEDULE THRU DEC 31 HEAT1\_ON\_W ..  
 \* 323 \*  
 \* 324 \* \$ HEAT SCHEDULE 80 DEG  
 \* 325 \* HEAT80\_ON =SCHEDULE THRU DEC 31 HEAT2\_ON\_W ..  
 \* 326 \*  
 \* 327 \* \$ HEATING HOURS SCHEDULE  
 \* 328 \* HEAT\_HRS =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 329 \*  
 \* 330 \* \$ FAN SCHED W SET BACK  
 \* 331 \* FAN\_W\_SB =SCHEDULE THRU DEC 31 FAN\_WSB\_W ..  
 \* 332 \*  
 \* 333 \* \$ HEAT SCHD WITH SET BACK  
 \* 334 \* HT68\_W\_SB =SCHEDULE THRU DEC 31 HT68\_WSB\_W ..  
 \* 335 \*  
 \* 336 \*  
 \* 337 \*

```

* 338 *      $ ZONE DESCRIPTION
* 339 *
* 340 * GYM      =ZONE  DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 341 *          HEAT-TEMP-SCH = HEAT68_ON ZONE-TYPE = CONDITIONED
* 342 *          THERMOSTAT-TYPE = PROPORTIONAL
* 343 *          BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 28950.
* 344 *          OUTSIDE-AIR-CFM = 4343. SIZING-OPTION = FROM-LOADS
* 345 *          RATED-CFM = 28950.0 MIN-CFM-RATIO = 1.0
* 346 *          EXHAUST-CFM = 4343.0 HEATING-CAPACITY = -625320.0 ..
* 347 *
* 348 * RCQT_&_WT =ZONE  DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 349 *          HEAT-TEMP-SCH = HEAT68_ON ZONE-TYPE = CONDITIONED
* 350 *          THERMOSTAT-TYPE = PROPORTIONAL
* 351 *          BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 9280.
* 352 *          OUTSIDE-AIR-CFM = 1392. SIZING-OPTION = FROM-LOADS
* 353 *          RATED-CFM = 9280.0 MIN-CFM-RATIO = 1.0
* 354 *          EXHAUST-CFM = 1392.0 HEATING-CAPACITY = -159516.0 ..
* 355 *
* 356 * LOBBY&OFFC =ZONE  DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 357 *          HEAT-TEMP-SCH = HEAT68_ON ZONE-TYPE = CONDITIONED
* 358 *          THERMOSTAT-TYPE = PROPORTIONAL
* 359 *          BASEBOARD-CTRL = THERMOSTATIC
* 360 *          BASEBOARD-RATING = -44300. ASSIGNED-CFM = 6595.
* 361 *          OUTSIDE-AIR-CFM = 1350. SIZING-OPTION = FROM-LOADS
* 362 *          RATED-CFM = 6595.0 MIN-CFM-RATIO = 1.0
* 363 *          EXHAUST-CFM = 1350.0 HEATING-CAPACITY = -280247.0 ..
* 364 *
* 365 * POOL      =ZONE  DESIGN-HEAT-T = 80.0 DESIGN-COOL-T = 90.0
* 366 *          HEAT-TEMP-SCH = HEAT80_ON ZONE-TYPE = CONDITIONED
* 367 *          THERMOSTAT-TYPE = PROPORTIONAL
* 368 *          BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 24620.
* 369 *          OUTSIDE-AIR-CFM = 1585. SIZING-OPTION = FROM-LOADS
* 370 *          RATED-CFM = 24620.0 MIN-CFM-RATIO = 1.0
* 371 *          EXHAUST-CFM = 1585.0 HEATING-CAPACITY = -327413.0 ..
* 372 *
* 373 *
* 374 *      $ SYSTEM DESCRIPTION
* 375 *
* 376 * HV_1      =SYSTEM  SYSTEM-TYPE = HVSYS
* 377 *          MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HEAT68_ON
* 378 *          MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 379 *          ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 380 *          SUPPLY-CFM = 38230. RETURN-CFM = 32400.
* 381 *          RATED-CFM = 38230. MIN-OUTSIDE-AIR = 0.15
* 382 *          SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 383 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 384 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 385 *          HEATING-CAPACITY = -784836. FURNACE-AUX = 0.
* 386 *          RETURN-AIR-PATH = DUCT
* 387 *          ZONE-NAMES = (GYM, RCQT_&_WT) ..

```

```

* 388 *
* 389 * HV_2   =SYSTEM  SYSTEM-TYPE = HVSYS
* 390 *       MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT80_ON
* 391 *       MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 392 *       ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 393 *       SUPPLY-CFM = 24620. RETURN-CFM = 23036.
* 394 *       RATED-CFM = 24620. MIN-OUTSIDE-AIR = 0.06
* 395 *       FAN-SCHEDULE = HEAT_HRS SUPPLY-DELTA-T = 2.4
* 396 *       SUPPLY-KW = 0.00039
* 397 *       MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 398 *       NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 399 *       HEATING-CAPACITY = -327413. FURNACE-AUX = 0.
* 400 *       ZONE-NAMES = (POOL) ..
* 401 *
* 402 * HV_3   =SYSTEM  SYSTEM-TYPE = HVSYS
* 403 *       MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HEAT68_ON
* 404 *       MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 405 *       ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 406 *       SUPPLY-CFM = 6595. RETURN-CFM = 5245.
* 407 *       RATED-CFM = 6595. MIN-OUTSIDE-AIR = 0.21
* 408 *       SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 409 *       NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 410 *       HEATING-CAPACITY = -280247. FURNACE-AUX = 0.
* 411 *       ZONE-NAMES = (LOBBY&OFFC) ..
* 412 *
* 413 * END ..
* 414 * COMPUTE SYSTEMS ..
* 415 *
* 416 * INPUT PLANT ..

```

# PDL PROCESSOR INPUT DATA

3/18/1995 16:32:24 PDL RUN 1

```

* 417 *
* 418 *
* 419 *       $-----$
* 420 *       $EZ-DOE PLANTS INPUT$
* 421 *       $-----$
* 422 *
* 423 *       $ GENERAL PROJECT DATA
* 424 *
* 425 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 426 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 427 * LINE-3 * DENVER, CO 80227 *
* 428 *
* 429 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *

```



\* 430 \*     LINE-5 \*BASE MODEL                     \* ..  
\* 431 \*  
\* 432 \* ABORT            ERRORS ..  
\* 433 \* DIAGNOSTIC       WARNINGS ..  
\* 434 \* PLANT-REPORT     SUMMARY=(PS-A,PS-B,BEPS)  
\* 435 \*  
\* 436 \*                 HOURLY-DATA-SAVE = YES ..  
\* 437 \*  
\* 438 \*                 \$ SCHEDULES  
\* 439 \*  
\* 440 \*  
\* 441 \*  
\* 442 \*  
\* 443 \*  
\* 444 \*                 \$ EQUIPMENT DESCRIPTION  
\* 445 \*  
\* 446 \* B1\_&\_B2   =PLANT-EQUIPMENT   TYPE = HW-BOILER  
\* 447 \*                 SIZE = 1.6   INSTALLED-NUMBER = 2  
\* 448 \*                 MAX-NUMBER-AVAIL = 2 ..  
\* 449 \*  
\* 450 \* DHW         =PLANT-EQUIPMENT   TYPE = DHW-HEATER  
\* 451 \*                 SIZE = 0.4   INSTALLED-NUMBER = 2  
\* 452 \*                 MAX-NUMBER-AVAIL = 2 ..  
\* 453 \*  
\* 454 \* PLANT-PARAMETERS   MAKEUP-WTR-T = 180.   CCIRC-HEAD = 63.0  
\* 455 \*                 HCIRC-DESIGN-T-DROP = 20.0 ..  
\* 456 \*  
\* 457 \*  
\* 458 \* ENERGY-RESOURCE   RESOURCE = ELECTRICITY ..  
\* 459 \* ENERGY-RESOURCE   RESOURCE = FUEL-OIL ..  
\* 460 \* ENERGY-RESOURCE   RESOURCE = NATURAL-GAS ..  
\* 461 \*  
\* 462 \*  
\* 463 \*  
\* 464 \* END ..  
\* 465 \* COMPUTE PLANT ..  
\* 466 \* STOP ..

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	174.10	4012.62	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	1385.29	0.00	0.00
DOM HOT WTR	0.00	0.00	250.49
AUX SOLAR	0.00	0.00	0.00
LIGHTS	123.73	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1394.84	0.00	0.00
	-----	-----	-----
TOTAL	3077.96	4012.62	250.49

TOTAL SITE ENERGY 7341.03 MBTU 228.3 KBTU/SQFT-YR GROSS-AREA 228.3 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 13506.15 MBTU 420.0 KBTU/SQFT-YR GROSS-AREA 420.0 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY- ELECTRICITY	FUEL-OIL	NATURAL-GAS
JAN	TOTAL(MBTU)	272.354	729.426
	PEAK(KBTU)	389.439	1544.666
	DY/HR	31/14	26/ 6
FEB	TOTAL(MBTU)	245.733	577.441
	PEAK(KBTU)	389.439	1341.365
	DY/HR	28/10	17/ 4
MAR	TOTAL(MBTU)	270.843	547.891
	PEAK(KBTU)	389.439	1398.541
	DY/HR	28/11	9/ 5
APR	TOTAL(MBTU)	254.024	296.065
	PEAK(KBTU)	378.406	1060.423
	DY/HR	1/10	3/ 5
MAY	TOTAL(MBTU)	259.036	246
	PEAK(KBTU)	389.439	1336.328
	DY/HR	20/14	16/ 3
JUN	TOTAL(MBTU)	242.699	81.219
	PEAK(KBTU)	386.103	822.919
	DY/HR	7/14	7/ 4
JUL	TOTAL(MBTU)	248.275	58.279
	PEAK(KBTU)	367.063	626.037
	DY/HR	8/10	24/14
AUG	TOTAL(MBTU)	249.921	71.329
	PEAK(KBTU)	378.107	1366.807
	DY/HR	24/10	6/24
SEP	TOTAL(MBTU)	248.83	204.421
	PEAK(KBTU)	389.439	1095.54
	DY/HR	23/14	23/ 4
OCT	TOTAL(MBTU)	258.234	218.067
	PEAK(KBTU)	377.144	846.511
	DY/HR	27/11	21/ 6
NOV	TOTAL(MBTU)	257.287	378.422
	PEAK(KBTU)	389.439	1169.195
	DY/HR	28/10	28/ 4

DEC	TOTAL(MBTU)	270.702	604.051	21.262
	PEAK(KBTU)	389.439	1384.531	46.013
	DY/HR	30/14	31/ 4	30/17
	ONE YEAR	3077.937	4012.611	250.486
	USE/PEAK	389.439	1544.666	46.013

**COMPUTER SIMULATIONS**  
BUILDING 4305

RUN 1 - SCHEDULE START/STOP AND NIGHT SETBACK

LDL PROCESSOR INPUT DATA

3/27/1995 12:53:33 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 *          $-----$
* 7 *          $EZ - DOE LOADS INPUT $
* 8 *          $-----$
* 9 *
* 10 *          $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 16 * LINE-5 *MODEL WITH SET BACK * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 * X-REF = 0.0
* 23 * Y-REF = 0.0 ..
* 24 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 *          $ SCHEDULES
* 28 *
* 29 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.1)
* 34 * (6,7) (0.35)
* 35 * (8,9) (0.5,0.6)
* 36 * (10,11) (0.75)
* 37 * (12) (0.5)
* 38 * (13,14) (0.75)
* 39 * (15) (0.5)
* 40 * (16,18) (0.4)
* 41 * (19,20) (0.3,0.23)
* 42 * (21,24) (0.1) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 * (7,19) (0.07)
* 46 * (20,24) (0.23) ..
* 47 *
* 48 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 49 * (6,7) (0.1,0.5)
* 50 * (8,11) (1.)
* 51 * (12) (0.8)
* 52 * (13,16) (1.)
* 53 * (17,20) (0.5)
* 54 * (21,24) (0.) ..
* 55 *
* 56 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 57 * (6,7) (0.1,0.2)
* 58 * (8,9) (0.3)
* 59 * (10,11) (0.4,0.7)
* 60 * (12,13) (0.4)
* 61 * (14,15) (0.8)
* 62 * (16,18) (0.7,0.3,0.1)
* 63 * (19,24) (0.05) ..
* 64 *
* 65 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 66 * (8) (1.)
* 67 * (9,16) (0.1)
* 68 * (17) (1.)
* 69 * (18,24) (0.1) ..
* 70 *
* 71 * DHW_D =DAY-SCHEDULE (1,5) (0.)
* 72 * (6,10) (0.1,0.3,0.4,0.5,0.15)
* 73 * (11) (0.25)
* 74 * (12,13) (0.7)
* 75 * (14,15) (0.5)
* 76 * (16,20) (0.8,1.,0.4,0.3,0.1)
* 77 * (21,24) (0.) ..
* 78 *
* 79 *
* 80 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 81 *
* 82 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 83 *
* 84 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 85 * (WEH) LT_ON_WKND ..
* 86 *
* 87 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 88 * (WEH) FULL_OFF_D ..
* 89 *
* 90 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 91 * (WEH) FULL_OFF_D ..
* 92 *
* 93 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 94 * (WEH) FULL_OFF_D ..
* 95 *
* 96 * DHW_W =WEEK-SCHEDULE (WD) DHW_D
* 97 * (WEH) FULL_OFF_D ..
* 98 *
* 99 *
* 100 * $ FULL ON SCHEDULE
* 101 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 102 *

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* 103 * $ FULL OFF SCHEDULE
* 104 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 105 *
* 106 * $ LIGHTING SCHEDULE
* 107 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 108 *
* 109 * $ OCCUPANCY SCHEDULE
* 110 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 111 *
* 112 * $ EQUIPMENT SCHEDULE
* 113 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 114 *
* 115 * $ SHOP INFILTRATION SCHED
* 116 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 117 *
* 118 * $ HOURS POOL IS HEATED
* 119 * POOL_HEAT =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 120 *
* 121 * $ DHW SCHEDULE
* 122 * DHW_SCHD =SCHEDULE THRU DEC 31 DHW_W ..
* 123 *
* 124 * POOL_VENT =SCHEDULE THRU MAY 15 FULL_OFF_W
* 125 * THRU OCT 1 FULL_ON_W
* 126 * THRU DEC 31 FULL_OFF_W ..
* 127 *
* 128 *
* 129 *
* 130 *
* 131 *
* 132 *
* 133 *
* 134 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 135 *
* 136 * $ ADMINISTRATION ROOF CONSTRUCTION
* 137 * ADMROOF =CONSTRUCTION LAYERS = ASHR-17 ..
* 138 *
* 139 * $ ROOF CONSTRUCTION
* 140 * ROOFCON =CONSTRUCTION U-VALUE = 0.060 ..
* 141 * WALLCON =CONSTRUCTION U-VALUE = 0.055 ..
* 142 * INWALL =CONSTRUCTION U-VALUE = 0.500 ..
* 143 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 144 * GLSSWALL =CONSTRUCTION U-VALUE = 1.130 ..
* 145 *
* 146 * G_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000
* 147 * PANES = 1
* 148 * GLASS-CONDUCTANCE = 1.130 ..
* 149 *
* 150 *
* 151 *
* 152 *
* 153 *
* 154 *
* 155 * $ SPACE DESCRIPTION
* 156 *
* 157 *
* 158 *
* 159 *
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* 210 *

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GYM =SPACE AREA = 10518.0 VOLUME = 399684.0  
 ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 1350.0  
 LIGHTING-TYPE = INCAND LIGHTING-KW = 6.9  
 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 EQUIP-SCHEDULE = EQUIP\_SCHD INF-METHOD = AIR-CHANGE  
 AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..

ROOF HEIGHT = 96.0 WIDTH = 112.0 CONS = ROOFCON  
 TILT = 0 ..

U-W HEIGHT = 96.0 WIDTH = 112.0 CONS = FLOORCON ..

E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON  
 AZIMUTH = 0 ..

DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON  
 MULTIPLIER = 2.0 ..

E-W HEIGHT = 38.0 WIDTH = 96.0 CONS = WALLCON  
 AZIMUTH = 90 ..

E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON  
 AZIMUTH = 180 ..

RCQT\_&\_WT =SPACE AREA = 2974.0 VOLUME = 47584.0  
 ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 NUMBER-OF-PEOPLE = 40.0 PEOPLE-HEAT-GAIN = 1350.0  
 LIGHTING-TYPE = INCAND LIGHTING-KW = 2.3  
 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 EQUIP-SCHEDULE = EQUIP\_SCHD INF-METHOD = AIR-CHANGE  
 AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..

ROOF HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON  
 TILT = 0 ..

U-W HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON ..

LOBBY&OFFC =SPACE AREA = 10428.0 VOLUME = 83424.0  
 ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE\_SCH  
 NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 800.0  
 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.0  
 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 EQUIP-SCHEDULE = EQUIP\_SCHD  
 SOURCE-SCHEDULE = DHW\_SCHD SOURCE-TYPE = HOT-WATER  
 SOURCE-BTU/HR = 16000.0 SOURCE-SENSIBLE = 0.3  
 SOURCE-LATENT = 0.1 INF-METHOD = AIR-CHANGE  
 AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL\_ON ..

ROOF HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON  
 TILT = 0 ..

U-W HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON ..

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* 211 *      E-W      HEIGHT = 10.0  WIDTH = 197.1  CONS = WALLCON
* 212 *      AZIMUTH = 0      ..
* 213 *
* 214 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 215 *      MULTIPLIER = 7.0      ..
* 216 *
* 217 *      E-W      HEIGHT = 10.0  WIDTH = 52.0   CONS = WALLCON
* 218 *      AZIMUTH = 90      ..
* 219 *
* 220 *      E-W      HEIGHT = 10.0  WIDTH = 80.8   CONS = WALLCON
* 221 *      AZIMUTH = 180     ..
* 222 *
* 223 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 224 *      MULTIPLIER = 4.0      ..
* 225 *
* 226 *      E-W      HEIGHT = 10.0  WIDTH = 70.4   CONS = WALLCON
* 227 *      AZIMUTH = 270     ..
* 228 *
* 229 *      I-W      HEIGHT = 10.0  WIDTH = 114.0  CONS = GLSSWALL
* 230 *      AZIMUTH = 270     NEXT-TO = POOL      ..
* 231 *
* 232 *
* 233 * POOL      =SPACE  AREA = 8237.0  VOLUME = 296532.0
* 234 *      TEMPERATURE = (80.)  ZONE-TYPE = CONDITIONED
* 235 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 236 *      PEOPLE-HEAT-GAIN = 800.0  LIGHTING-TYPE = INCAND
* 237 *      LIGHTING-KW = 3.0  LIGHTING-SCHEDULE = LIGHT_SCHD
* 238 *      EQUIP-SCHEDULE = POOL_HEAT  EQUIPMENT-KW = 46.65
* 239 *      EQUIP-SENSIBLE = 0.5  FLOOR-WEIGHT = 200.
* 240 *      FURNITURE-TYPE = HEAVY  FURN-WEIGHT = 15.
* 241 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 2.0
* 242 *      INF-SCHEDULE = POOL_VENT      ..
* 243 *
* 244 *      ROOF      HEIGHT = 108.7  WIDTH = 109.8  CONS = ROOFCON
* 245 *      TILT = 0      ..
* 246 *
* 247 *      U-W      HEIGHT = 108.7  WIDTH = 109.8  CONS = FLOORCON ..
* 248 *
* 249 *      E-W      HEIGHT = 36.0   WIDTH = 109.8  CONS = WALLCON
* 250 *      AZIMUTH = 180     ..
* 251 *
* 252 *      E-W      HEIGHT = 36.0   WIDTH = 108.7  CONS = WALLCON
* 253 *      AZIMUTH = 270     ..
* 254 *
* 255 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 256 *      MULTIPLIER = 2.0      ..
* 257 *
* 258 *
* 259 * END      ..
* 260 * COMPUTE LOADS      ..
* 261 *
* 262 * INPUT SYSTEMS      ..

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SDL PROCESSOR INPUT DATA

3/27/1995 12:53:33 SDL RUN 1

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* 263 *
* 264 *
* 265 *      $-----$
* 266 *      $ E Z - D O E   S Y S T E M S   I N P U T $
* 267 *      $-----$
* 268 *
* 269 *      $ GENERAL PROJECT DATA
* 270 *
* 271 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 272 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 273 * LINE-3 * DENVER, CO 80227 *
* 274 *
* 275 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 276 * LINE-5 *MODEL WITH SET BACK * ..
* 277 * ABORT ERRORS ..
* 278 * DIAGNOSTIC WARNINGS ..
* 279 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-B,SS-C)
* 280 * HOURLY-DATA-SAVE = YES ..
* 281 *
* 282 *      $ SCHEDULES
* 283 *
* 284 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 285 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 286 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (74.) ..
* 287 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (80.) ..
* 288 * FAN_WSB_D =DAY-SCHEDULE (1,5) (0.)
* 289 * (6,19) (1.)
* 290 * (20,24) (0.) ..
* 291 * HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
* 292 * (6,19) (74.)
* 293 * (20,24) (50.) ..
* 294 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 295 *
* 296 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 297 *
* 298 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 299 *
* 300 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 301 *
* 302 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 303 *
* 304 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 305 * (SAT) FULL_OFF_D
* 306 * (SUN) FULL_OFF_D
* 307 * (HOL) FAN_WSB_D ..
* 308 *
* 309 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 310 * (SAT) FULL_OFF_D
* 311 * (SUN) FULL_OFF_D
* 312 * (HOL) HT68_WSB_D ..
* 313 *
* 314 *
* 315 * $ FULL ON SCHEDULE
* 316 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 317 *
* 318 * $ FULL OFF SCHEDULE
* 319 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 320 *
* 321 * $ HEAT SCHEDULE 68 DEG
* 322 * HEAT68_ON =SCHEDULE THRU DEC 31 HEAT1_ON_W ..
* 323 *
* 324 * $ HEAT SCHEDULE 80 DEG
* 325 * HEAT80_ON =SCHEDULE THRU DEC 31 HEAT2_ON_W ..
* 326 *
* 327 * $ HEATING HOURS SCHEDULE
* 328 * HEAT_HRS =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 329 *
* 330 * $ FAN SCHED W SET BACK
* 331 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 332 *
* 333 * $ HEAT SCHD WITH SET BACK
* 334 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 335 *
* 336 *
* 337 *
* 338 *      $ ZONE DESCRIPTION
* 339 *
* 340 * GYM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 341 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 342 * THERMOSTAT-TYPE = PROPORTIONAL
* 343 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 28950.
* 344 * OUTSIDE-AIR-CFM = 4343. SIZING-OPTION = FROM-LOADS
* 345 * RATED-CFM = 28950.0 MIN-CFM-RATIO = 1.0
* 346 * EXHAUST-CFM = 4343.0 HEATING-CAPACITY = -625320.0 ..
* 347 *
* 348 * RCQT_&_WT =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 349 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 350 * THERMOSTAT-TYPE = PROPORTIONAL
* 351 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 9280.
* 352 * OUTSIDE-AIR-CFM = 1392. SIZING-OPTION = FROM-LOADS
* 353 * RATED-CFM = 9280.0 MIN-CFM-RATIO = 1.0
* 354 * EXHAUST-CFM = 1392.0 HEATING-CAPACITY = -159516.0 ..
* 355 *
* 356 * LOBBY&OFFC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 357 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 358 * THERMOSTAT-TYPE = PROPORTIONAL
* 359 * BASEBOARD-CTRL = THERMOSTATIC
* 360 * BASEBOARD-RATING = -44300. ASSIGNED-CFM = 6595.
* 361 * OUTSIDE-AIR-CFM = 1350. SIZING-OPTION = FROM-LOADS
* 362 * RATED-CFM = 6595.0 MIN-CFM-RATIO = 1.0

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* 363 *          EXHAUST-CFM = 1350.0  HEATING-CAPACITY = -280247.0  ..
* 364 *
* 365 * POOL      =ZONE  DESIGN-HEAT-T = 80.0  DESIGN-COOL-T = 90.0
* 366 *          HEAT-TEMP-SCH = HEAT80 ON  ZONE-TYPE = CONDITIONED
* 367 *          THERMOSTAT-TYPE = PROPORTIONAL
* 368 *          BASEBOARD-CTRL = THERMOSTATIC  ASSIGNED-CFM = 24620.
* 369 *          OUTSIDE-AIR-CFM = 1585.  SIZING-OPTION = FROM-LOADS
* 370 *          RATED-CFM = 24620.0  MIN-CFM-RATIO = 1.0
* 371 *          EXHAUST-CFM = 1585.0  HEATING-CAPACITY = -327413.0  ..
* 372 *
* 373 *
* 374 *          $ SYSTEM DESCRIPTION
* 375 *
* 376 * HV_1      =SYSTEM  SYSTEM-TYPE = HVSYS
* 377 *          MAX-SUPPLY-T = 135.0  HEATING-SCHEDULE = HEAT68_ON
* 378 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 379 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 380 *          SUPPLY-CFM = 38230.  RETURN-CFM = 32400.
* 381 *          RATED-CFM = 38230.  MIN-OUTSIDE-AIR = 0.15
* 382 *          FAN-SCHEDULE = FAN_W_SB  SUPPLY-DELTA-T = 2.4
* 383 *          SUPPLY-KW = 0.00078
* 384 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 385 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  NIGHT-VENT-DT = 0.0
* 386 *          HEATING-CAPACITY = -784836.  FURNACE-AUX = 0.
* 387 *          RETURN-AIR-PATH = DUCT
* 388 *          ZONE-NAMES = (GYM, RCQT_&_WT)  ..
* 389 *
* 390 * HV_2      =SYSTEM  SYSTEM-TYPE = HVSYS
* 391 *          MAX-SUPPLY-T = 120.0  HEATING-SCHEDULE = HEAT80_ON
* 392 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 393 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 394 *          SUPPLY-CFM = 24620.  RETURN-CFM = 23036.
* 395 *          RATED-CFM = 24620.  MIN-OUTSIDE-AIR = 0.06
* 396 *          FAN-SCHEDULE = HEAT_HRS  SUPPLY-DELTA-T = 2.4
* 397 *          SUPPLY-KW = 0.00039
* 398 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 399 *          NIGHT-CYCLE-CTRL = STAY-OFF  NIGHT-VENT-DT = 0.0
* 400 *          HEATING-CAPACITY = -327413.  FURNACE-AUX = 0.
* 401 *          ZONE-NAMES = (POOL)  ..
* 402 *
* 403 * HV_3      =SYSTEM  SYSTEM-TYPE = HVSYS
* 404 *          MAX-SUPPLY-T = 135.0  HEATING-SCHEDULE = HEAT68_ON
* 405 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 406 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 407 *          SUPPLY-CFM = 6595.  RETURN-CFM = 5245.
* 408 *          RATED-CFM = 6595.  MIN-OUTSIDE-AIR = 0.21
* 409 *          FAN-SCHEDULE = FAN_W_SB  SUPPLY-DELTA-T = 2.4
* 410 *          SUPPLY-KW = 0.00078  NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 411 *          NIGHT-VENT-DT = 0.0  HEATING-CAPACITY = -280247.
* 412 *          FURNACE-AUX = 0.
* 413 *          ZONE-NAMES = (LOBBY&OFFC)  ..
* 414 *
* 415 * END
* 416 * COMPUTE SYSTEMS  ..
* 417 *
* 418 * INPUT PLANT  ..

```

P D L P R O C E S S O R I N P U T D A T A

3/27/1995 12:53:33 PDL RUN 1

```

* 419 *
* 420 *
* 421 *          $-----$
* 422 *          $ E Z - D O E P L A N T S I N P U T $
* 423 *          $-----$
* 424 *
* 425 *          $ GENERAL PROJECT DATA
* 426 *
* 427 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 428 *          LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 429 *          LINE-3 *      DENVER,      CO      80227      *
* 430 *
* 431 *          LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 432 *          LINE-5 *MODEL WITH SET BACK      * ..
* 433 *
* 434 * ABORT      ERRORS ..
* 435 * DIAGNOSTIC  WARNINGS ..
* 436 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 437 *
* 438 *          HOURLY-DATA-SAVE = YES ..
* 439 *
* 440 *          $ SCHEDULES
* 441 *
* 442 *
* 443 *
* 444 *
* 445 *
* 446 *          $ EQUIPMENT DESCRIPTION
* 447 *
* 448 * B1_&_B2      =PLANT-EQUIPMENT  TYPE = HW-BOILER
* 449 *          SIZE = 1.6  INSTALLED-NUMBER = 2
* 450 *          MAX-NUMBER-AVAIL = 2 ..
* 451 *
* 452 * DHW          =PLANT-EQUIPMENT  TYPE = DHW-HEATER
* 453 *          SIZE = 0.4  INSTALLED-NUMBER = 2
* 454 *          MAX-NUMBER-AVAIL = 2 ..
* 455 *
* 456 * PLANT-PARAMETERS  MAKEUP-WTR-T = 180.  CCIRC-HEAD = 63.0
* 457 *          HCIRC-DESIGN-T-DROP = 20.0 ..
* 458 *
* 459 *
* 460 * ENERGY-RESOURCE  RESOURCE = ELECTRICITY ..
* 461 * ENERGY-RESOURCE  RESOURCE = FUEL-OIL ..
* 462 * ENERGY-RESOURCE  RESOURCE = NATURAL-GAS ..
* 463 *
* 464 *
* 465 *
* 466 * END ..
* 467 * COMPUTE PLANT ..
* 468 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	101.94	2,273.58	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	779.59	0.00	0.00
DOM HOT WTR	0.00	0.00	250.49
AUX SOLAR	0.00	0.00	0.00
LIGHTS	123.73	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1,394.84	0.00	0.00
	-----	-----	-----
TOTAL	2,400.09	2,273.58	250.49

TOTAL SITE ENERGY 4924.04 MBTU 153.1 KBTU/SQFT-YR GROSS-AREA 153.1 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 9731.19 MBTU 302.6 KBTU/SQFT-YR GROSS-AREA 302.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.5  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY

MO	UTILITY-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
	TOTAL (MBTU)	209.519	407.881	21.116
JAN	PEAK (KBTU)	390.231	1700.861	46.013
	DY/HR	31/14	26/ 7	31/17
	TOTAL (MBTU)	190.489	311.438	19.223
FEB	PEAK (KBTU)	390.231	1548.634	46.013
	DY/HR	28/14	8/ 6	28/17
	TOTAL (MBTU)	210.814	296.494	21.408
MAR	PEAK (KBTU)	390.231	1574.661	46.013
	DY/HR	31/11	9/ 6	31/17
	TOTAL (MBTU)	195.520	143.650	20.534
APR	PEAK (KBTU)	390.231	1222.364	46.013
	DY/HR	25/10	4/ 6	29/17
	TOTAL (MBTU)	203.098	166.364	21.262
MAY	PEAK (KBTU)	390.231	1626.238	46.013
	DY/HR	20/14	16/ 6	31/17
	TOTAL (MBTU)	192.463	64.652	20.680
JUN	PEAK (KBTU)	387.041	752.570	46.013
	DY/HR	7/14	7/ 7	30/17
	TOTAL (MBTU)	193.702	46.841	21.116
JUL	PEAK (KBTU)	367.895	556.820	46.013
	DY/HR	8/10	24/14	29/17
	TOTAL (MBTU)	198.562	56.959	21.408
AUG	PEAK (KBTU)	378.921	665.199	46.013
	DY/HR	24/10	25/ 6	31/17
	TOTAL (MBTU)	197.694	157.681	20.680
SEP	PEAK (KBTU)	390.231	1106.376	46.013
	DY/HR	23/14	23/ 6	30/17
	TOTAL (MBTU)	198.669	108.786	21.116
OCT	PEAK (KBTU)	383.489	925.569	46.013
	DY/HR	27/10	21/ 6	31/17
	TOTAL (MBTU)	200.046	194.384	20.680
NOV	PEAK (KBTU)	390.231	1458.630	46.013
	DY/HR	30/11	28/ 7	30/17
	TOTAL (MBTU)	209.398	318.448	21.262
DEC	PEAK (KBTU)	390.231	1533.566	46.013
	DY/HR	30/14	19/ 7	30/17
	ONE YEAR	2399.974	2273.579	250.486
	USE/PEAK	390.231	1700.861	46.013

**COMPUTER SIMULATIONS**  
BUILDING 4305

RUN 3 - DDC

LDL PROCESSOR INPUT DATA

3/18/1995 16:44: 5 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 *
* 7 *
* 8 *
* 9 *
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 16 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 * X-REF = 0.0
* 23 * Y-REF = 0.0 ..
* 24 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 * $ SCHEDULES
* 28 *
* 29 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.1)
* 34 * (6,7) (0.35)
* 35 * (8,9) (0.5,0.6)
* 36 * (10,11) (0.75)
* 37 * (12) (0.5)
* 38 * (13,14) (0.75)
* 39 * (15) (0.5)
* 40 * (16,18) (0.4)
* 41 * (19,20) (0.3,0.23)
* 42 * (21,24) (0.1) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 * (7,19) (0.07)
* 46 * (20,24) (0.23) ..
* 47 *
* 48 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 49 * (6,7) (0.1,0.5)
* 50 * (8,11) (1.)
* 51 * (12) (0.8)
* 52 * (13,16) (1.)
* 53 * (17,20) (0.5)
* 54 * (21,24) (0.) ..
* 55 *
* 56 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 57 * (6,7) (0.1,0.2)
* 58 * (8,9) (0.3)
* 59 * (10,11) (0.4,0.7)
* 60 * (12,13) (0.4)
* 61 * (14,15) (0.8)
* 62 * (16,18) (0.7,0.3,0.1)
* 63 * (19,24) (0.05) ..
* 64 *
* 65 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 66 * (8) (1.)
* 67 * (9,16) (0.1)
* 68 * (17) (1.)
* 69 * (18,24) (0.1) ..
* 70 *
* 71 * DHW_D =DAY-SCHEDULE (1,5) (0.)
* 72 * (6,10) (0.1,0.3,0.4,0.5,0.15)
* 73 * (11) (0.25)
* 74 * (12,13) (0.7)
* 75 * (14,15) (0.5)
* 76 * (16,20) (0.8,1.,0.4,0.3,0.1)
* 77 * (21,24) (0.) ..
* 78 *
* 79 *
* 80 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 81 *
* 82 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 83 *
* 84 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 85 * (WEH) LT_ON_WKND ..
* 86 *
* 87 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 88 * (WEH) FULL_OFF_D ..
* 89 *
* 90 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 91 * (WEH) FULL_OFF_D ..
* 92 *
* 93 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 94 * (WEH) FULL_OFF_D ..
* 95 *
* 96 * DHW_W =WEEK-SCHEDULE (WD) DHW_D
* 97 * (WEH) FULL_OFF_D ..
* 98 *
* 99 *
* 100 * $ FULL ON SCHEDULE
* 101 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 102 *

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* 103 * $ FULL OFF SCHEDULE
* 104 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 105 *
* 106 * $ LIGHTING SCHEDULE
* 107 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 108 *
* 109 * $ OCCUPANCY SCHEDULE
* 110 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 111 *
* 112 * $ EQUIPMENT SCHEDULE
* 113 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 114 *
* 115 * $ SHOP INFILTRATION SCHED
* 116 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 117 *
* 118 * $ HOURS POOL IS HEATED
* 119 * POOL_HEAT =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 120 *
* 121 * $ DHW SCHEDULE
* 122 * DHW_SCHD =SCHEDULE THRU DEC 31 DHW_W ..
* 123 *
* 124 * POOL_VENT =SCHEDULE THRU MAY 15 FULL_OFF_W
* 125 * THRU OCT 1 FULL_ON_W
* 126 * THRU DEC 31 FULL_OFF_W ..
* 127 *
* 128 *
* 129 *
* 130 * $ CONSTRUCTION TYPES
* 131 *
* 132 *
* 133 *
* 134 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 135 *
* 136 * $ ADMINISTRATION ROOF CONSTRUCTION
* 137 * ADMROOF =CONSTRUCTION LAYERS = ASHR-17 ..
* 138 *
* 139 * $ ROOF CONSTRUCTION
* 140 * ROOFCON =CONSTRUCTION U-VALUE = 0.060 ..
* 141 * WALLCON =CONSTRUCTION U-VALUE = 0.055 ..
* 142 * INWALL =CONSTRUCTION U-VALUE = 0.500 ..
* 143 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 144 * GLSSWALL =CONSTRUCTION U-VALUE = 1.130 ..
* 145 *
* 146 * G_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000
* 147 * PANES = 1
* 148 * GLASS-CONDUCTANCE = 1.130 ..
* 149 *
* 150 *
* 151 *
* 152 *
* 153 * $ SPACE DESCRIPTION
* 154 *
* 155 * GYM =SPACE AREA = 10518.0 VOLUME = 399684.0
* 156 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 157 * NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 1350.0
* 158 * LIGHTING-TYPE = INCAND LIGHTING-KW = 6.9
* 159 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 160 * EQUIP-SCHEDULE = EQUIP_SCHD INF-METHOD = AIR-CHANGE
* 161 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 162 *
* 163 * ROOF HEIGHT = 96.0 WIDTH = 112.0 CONS = ROOFCON
* 164 * TILT = 0 ..
* 165 *
* 166 * U-W HEIGHT = 96.0 WIDTH = 112.0 CONS = FLOORCON ..
* 167 *
* 168 * E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON
* 169 * AZIMUTH = 0 ..
* 170 *
* 171 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON
* 172 * MULTIPLIER = 2.0 ..
* 173 *
* 174 * E-W HEIGHT = 38.0 WIDTH = 96.0 CONS = WALLCON
* 175 * AZIMUTH = 90 ..
* 176 *
* 177 * E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON
* 178 * AZIMUTH = 180 ..
* 179 *
* 180 *
* 181 * RCQT_&_WT =SPACE AREA = 2974.0 VOLUME = 47584.0
* 182 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 183 * NUMBER-OF-PEOPLE = 40.0 PEOPLE-HEAT-GAIN = 1350.0
* 184 * LIGHTING-TYPE = INCAND LIGHTING-KW = 2.3
* 185 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 186 * EQUIP-SCHEDULE = EQUIP_SCHD INF-METHOD = AIR-CHANGE
* 187 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 188 *
* 189 * ROOF HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON
* 190 * TILT = 0 ..
* 191 *
* 192 * U-W HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON ..
* 193 *
* 194 *
* 195 * LOBBY&OFFC =SPACE AREA = 10428.0 VOLUME = 83424.0
* 196 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 197 * NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 800.0
* 198 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.0
* 199 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 200 * EQUIP-SCHEDULE = EQUIP_SCHD
* 201 * SOURCE-SCHEDULE = DHW_SCHD SOURCE-TYPE = HOT-WATER
* 202 * SOURCE-BTU/HR = 16000.0 SOURCE-SENSIBLE = 0.3
* 203 * SOURCE-LATENT = 0.1 INF-METHOD = AIR-CHANGE
* 204 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 205 *
* 206 * ROOF HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON
* 207 * TILT = 0 ..
* 208 *
* 209 * U-W HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON ..
* 210 *

```



```

* 211 *      E-W      HEIGHT = 10.0  WIDTH = 197.1  CONS = WALLCON
* 212 *      AZIMUTH = 0      ..
* 213 *
* 214 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 215 *      MULTIPLIER = 7.0      ..
* 216 *
* 217 *      E-W      HEIGHT = 10.0  WIDTH = 52.0   CONS = WALLCON
* 218 *      AZIMUTH = 90      ..
* 219 *
* 220 *      E-W      HEIGHT = 10.0  WIDTH = 80.8   CONS = WALLCON
* 221 *      AZIMUTH = 180     ..
* 222 *
* 223 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 224 *      MULTIPLIER = 4.0      ..
* 225 *
* 226 *      E-W      HEIGHT = 10.0  WIDTH = 70.4   CONS = WALLCON
* 227 *      AZIMUTH = 270     ..
* 228 *
* 229 *      I-W      HEIGHT = 10.0  WIDTH = 114.0  CONS = GLSSWALL
* 230 *      AZIMUTH = 270     NEXT-TO = POOL      ..
* 231 *
* 232 *
* 233 * POOL      =SPACE  AREA = 8237.0  VOLUME = 296532.0
* 234 *      TEMPERATURE = (80.)  ZONE-TYPE = CONDITIONED
* 235 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 236 *      PEOPLE-HEAT-GAIN = 800.0  LIGHTING-TYPE = INCAND
* 237 *      LIGHTING-KW = 3.0  LIGHTING-SCHEDULE = LIGHT_SCHD
* 238 *      EQUIP-SCHEDULE = POOL_HEAT  EQUIPMENT-KW = 46.65
* 239 *      EQUIP-SENSIBLE = 0.5  FLOOR-WEIGHT = 200.
* 240 *      FURNITURE-TYPE = HEAVY  FURN-WEIGHT = 15.
* 241 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 2.0
* 242 *      INF-SCHEDULE = POOL_VENT      ..
* 243 *
* 244 *      ROOF      HEIGHT = 108.7  WIDTH = 109.8  CONS = ROOFCON
* 245 *      TILT = 0      ..
* 246 *
* 247 *      U-W      HEIGHT = 108.7  WIDTH = 109.8  CONS = FLOORCON ..
* 248 *
* 249 *      E-W      HEIGHT = 36.0   WIDTH = 109.8  CONS = WALLCON
* 250 *      AZIMUTH = 180     ..
* 251 *
* 252 *      E-W      HEIGHT = 36.0   WIDTH = 108.7  CONS = WALLCON
* 253 *      AZIMUTH = 270     ..
* 254 *
* 255 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 256 *      MULTIPLIER = 2.0      ..
* 257 *
* 258 *
* 259 * END      ..
* 260 * COMPUTE LOADS      ..
* 261 *
* 262 * INPUT SYSTEMS      ..

```

SDL PROCESSOR INPUT DATA

3/18/1995 16:44: 5 SDL RUN 1

```

* 263 *
* 264 *
* 265 *      $-----$
* 266 *      $EZ - DOE SYSTEMS INPUT$
* 267 *      $-----$
* 268 *
* 269 *      $ GENERAL PROJECT DATA
* 270 *
* 271 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 272 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 273 * LINE-3 * DENVER, CO 80227 *
* 274 *
* 275 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 276 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 277 * ABORT ERRORS ..
* 278 * DIAGNOSTIC WARNINGS ..
* 279 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-H,SS-K)
* 280 * HOURLY-DATA-SAVE = YES ..
* 281 *
* 282 *      $ SCHEDULES
* 283 *
* 284 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 285 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 286 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (68.) ..
* 287 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (80.) ..
* 288 * FAN_WSB_D =DAY-SCHEDULE (1,5) (0.)
* 289 * (6,19) (1.)
* 290 * (20,24) (0.) ..
* 291 * HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
* 292 * (6,19) (68.)
* 293 * (20,24) (50.) ..
* 294 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 295 *
* 296 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 297 *
* 298 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 299 *
* 300 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 301 *
* 302 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 303 *
* 304 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 305 * (SAT) FULL_OFF_D
* 306 * (SUN) FULL_OFF_D
* 307 * (HOL) FAN_WSB_D ..
* 308 *
* 309 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 310 * (SAT) FULL_OFF_D
* 311 * (SUN) FULL_OFF_D
* 312 * (HOL) HT68_WSB_D ..
* 313 *
* 314 *
* 315 * $ FULL ON SCHEDULE
* 316 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 317 *
* 318 * $ FULL OFF SCHEDULE
* 319 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 320 *
* 321 * $ HEAT SCHEDULE, 68 DEG
* 322 * HEAT68_ON =SCHEDULE THRU DEC 31 HEAT1_ON_W ..
* 323 *
* 324 * $ HEAT SCHEDULE 80 DEG
* 325 * HEAT80_ON =SCHEDULE THRU DEC 31 HEAT2_ON_W ..
* 326 *
* 327 * $ HEATING HOURS SCHEDULE
* 328 * HEAT_HRS =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 329 *
* 330 * $ FAN SCHED W SET BACK
* 331 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 332 *
* 333 * $ HEAT SCHED WITH SET BACK
* 334 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 335 *
* 336 *
* 337 *
* 338 *      $ ZONE DESCRIPTION
* 339 *
* 340 * GYM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 341 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 342 * THERMOSTAT-TYPE = PROPORTIONAL
* 343 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 28950.
* 344 * OUTSIDE-AIR-CFM = 4343. SIZING-OPTION = FROM-LOADS
* 345 * RATED-CFM = 28950.0 MIN-CFM-RATIO = 1.0
* 346 * EXHAUST-CFM = 4343.0 HEATING-CAPACITY = -625320.0 ..
* 347 *
* 348 * RCQT_&_WT =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 349 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 350 * THERMOSTAT-TYPE = PROPORTIONAL
* 351 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 9280.
* 352 * OUTSIDE-AIR-CFM = 1392. SIZING-OPTION = FROM-LOADS
* 353 * RATED-CFM = 9280.0 MIN-CFM-RATIO = 1.0
* 354 * EXHAUST-CFM = 1392.0 HEATING-CAPACITY = -159516.0 ..
* 355 *
* 356 * LOBBY&OFFC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 357 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 358 * THERMOSTAT-TYPE = PROPORTIONAL
* 359 * BASEBOARD-CTRL = THERMOSTATIC
* 360 * BASEBOARD-RATING = -44300. ASSIGNED-CFM = 6595.
* 361 * OUTSIDE-AIR-CFM = 1350. SIZING-OPTION = FROM-LOADS
* 362 * RATED-CFM = 6595.0 MIN-CFM-RATIO = 1.0

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* 363 *          EXHAUST-CFM = 1350.0  HEATING-CAPACITY = -280247.0  ..
* 364 *
* 365 * POOL      =ZONE  DESIGN-HEAT-T = 80.0  DESIGN-COOL-T = 90.0
* 366 *          HEAT-TEMP-SCH = HEAT80_ON  ZONE-TYPE = CONDITIONED
* 367 *          THERMOSTAT-TYPE = PROPORTIONAL
* 368 *          BASEBOARD-CTRL = THERMOSTATIC  ASSIGNED-CFM = 24620.
* 369 *          OUTSIDE-AIR-CFM = 1585.  SIZING-OPTION = FROM-LOADS
* 370 *          RATED-CFM = 24620.0  MIN-CFM-RATIO = 1.0
* 371 *          EXHAUST-CFM = 1585.0  HEATING-CAPACITY = -327413.0  ..
* 372 *
* 373 *
* 374 *          $ SYSTEM DESCRIPTION
* 375 *
* 376 * HV_1      =SYSTEM  SYSTEM-TYPE = HVSYS
* 377 *          MAX-SUPPLY-T = 135.0  HEATING-SCHEDULE = HEAT68_ON
* 378 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 379 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 380 *          SUPPLY-CFM = 38230.  RETURN-CFM = 32400.
* 381 *          RATED-CFM = 38230.  MIN-OUTSIDE-AIR = 0.15
* 382 *          FAN-SCHEDULE = FAN_W_SB  SUPPLY-DELTA-T = 2.4
* 383 *          SUPPLY-KW = 0.00078
* 384 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 385 *          NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  NIGHT-VENT-DT = 0.0
* 386 *          HEATING-CAPACITY = -784836.  FURNACE-AUX = 0.
* 387 *          RETURN-AIR-PATH = DUCT
* 388 *          ZONE-NAMES = (GYM, RCQT_&_WT)  ..
* 389 *
* 390 * HV_2      =SYSTEM  SYSTEM-TYPE = HVSYS
* 391 *          MAX-SUPPLY-T = 120.0  HEATING-SCHEDULE = HEAT80_ON
* 392 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 393 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 394 *          SUPPLY-CFM = 24620.  RETURN-CFM = 23036.
* 395 *          RATED-CFM = 24620.  MIN-OUTSIDE-AIR = 0.06
* 396 *          FAN-SCHEDULE = HEAT_HRS  SUPPLY-DELTA-T = 2.4
* 397 *          SUPPLY-KW = 0.00039
* 398 *          MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 399 *          NIGHT-CYCLE-CTRL = STAY-OFF  NIGHT-VENT-DT = 0.0
* 400 *          HEATING-CAPACITY = -327413.  FURNACE-AUX = 0.
* 401 *          ZONE-NAMES = (POOL)  ..
* 402 *
* 403 * HV_3      =SYSTEM  SYSTEM-TYPE = HVSYS
* 404 *          MAX-SUPPLY-T = 135.0  HEATING-SCHEDULE = HEAT68_ON
* 405 *          MIN-HUMIDITY = 30.0  ECONO-LIMIT-T = 65.0
* 406 *          ECONO-LOW-LIMIT = 55.0  HEAT-CONTROL = COLDEST
* 407 *          SUPPLY-CFM = 6595.  RETURN-CFM = 5245.
* 408 *          RATED-CFM = 6595.  MIN-OUTSIDE-AIR = 0.21
* 409 *          FAN-SCHEDULE = FAN_W_SB  SUPPLY-DELTA-T = 2.4
* 410 *          SUPPLY-KW = 0.00078  NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 411 *          NIGHT-VENT-DT = 0.0  HEATING-CAPACITY = -280247.
* 412 *          FURNACE-AUX = 0.
* 413 *          ZONE-NAMES = (LOBBY&OFFC)  ..
* 414 *
* 415 * END  ..
* 416 * COMPUTE SYSTEMS  ..
* 417 *
* 418 * INPUT PLANT  ..

```

PDL PROCESSOR INPUT DATA

3/18/1995 16:44: 5 PDL RUN 1

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* 419 *
* 420 *
* 421 *      $-----$
* 422 *      $ E Z - D O E   P L A N T S   I N P U T $
* 423 *      $-----$
* 424 *
* 425 *      $ GENERAL PROJECT DATA
* 426 *
* 427 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 428 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 429 *      LINE-3 *      DENVER,      CO      80227      *
* 430 *
* 431 *      LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 432 *      LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 433 *
* 434 * ABORT      ERRORS ..
* 435 * DIAGNOSTIC  WARNINGS ..
* 436 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 437 *
* 438 *      HOURLY-DATA-SAVE = YES ..
* 439 *
* 440 *      $ SCHEDULES
* 441 *
* 442 *
* 443 *
* 444 *
* 445 *
* 446 *      $ EQUIPMENT DESCRIPTION
* 447 *
* 448 * B1_&_B2      =PLANT-EQUIPMENT  TYPE = HW-BOILER
* 449 *      SIZE = 1.6  INSTALLED-NUMBER = 2
* 450 *      MAX-NUMBER-AVAIL = 2 ..
* 451 *
* 452 * DHW      =PLANT-EQUIPMENT  TYPE = DHW-HEATER
* 453 *      SIZE = 0.4  INSTALLED-NUMBER = 2
* 454 *      MAX-NUMBER-AVAIL = 2 ..
* 455 *
* 456 * PLANT-PARAMETERS  MAKEUP-WTR-T = 180.  CCIRC-HEAD = 63.0
* 457 *      HCIRC-DESIGN-T-DROP = 20.0 ..
* 458 *
* 459 *
* 460 * ENERGY-RESOURCE  RESOURCE = ELECTRICITY ..
* 461 * ENERGY-RESOURCE  RESOURCE = FUEL-OIL ..
* 462 * ENERGY-RESOURCE  RESOURCE = NATURAL-GAS ..
* 463 *
* 464 *
* 465 *
* 466 * END ..
* 467 * COMPUTE PLANT ..
* 468 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	92.41	1,959.74	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	776.18	0.00	0.00
DOM HOT WTR	0.00	0.00	250.49
AUX SOLAR	0.00	0.00	0.00
LIGHTS	123.73	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1,394.83	0.00	0.00
	-----	-----	-----
TOTAL	2,387.16	1,959.74	250.49

TOTAL SITE ENERGY 4597.26 MBTU 143.0 KBTU/SQFT-YR GROSS-AREA 143.0 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 9378.52 MBTU 291.6 KBTU/SQFT-YR GROSS-AREA 291.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.1  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
	TOTAL (MBTU)	209.597	373.243	21.116
JAN	PEAK (KBTU)	389.781	1612.407	46.013
	DY/HR	31/14	26/ 6	31/17
	TOTAL (MBTU)	189.908	277.856	19.223
FEB	PEAK (KBTU)	389.781	1541.600	46.013
	DY/HR	28/14	14/ 7	28/17
	TOTAL (MBTU)	209.450	253.933	21.408
MAR	PEAK (KBTU)	389.781	1486.245	46.013
	DY/HR	28/14	28/ 7	31/17
	TOTAL (MBTU)	193.137	100.265	20.534
APR	PEAK (KBTU)	388.782	1061.692	46.013
	DY/HR	4/10	4/ 6	29/17
	TOTAL (MBTU)	201.685	142.639	21.262
MAY	PEAK (KBTU)	389.781	1373.928	46.013
	DY/HR	20/11	16/ 6	31/17
	TOTAL (MBTU)	191.834	60.446	20.680
JUN	PEAK (KBTU)	386.704	596.514	46.013
	DY/HR	7/14	7/14	30/17
	TOTAL (MBTU)	193.412	46.028	21.116
JUL	PEAK (KBTU)	367.524	556.251	46.013
	DY/HR	8/10	24/14	29/17
	TOTAL (MBTU)	198.201	55.113	21.408
AUG	PEAK (KBTU)	378.058	585.740	46.013
	DY/HR	24/10	6/24	31/17
	TOTAL (MBTU)	196.919	146.079	20.680
SEP	PEAK (KBTU)	389.781	906.787	46.013
	DY/HR	23/14	23/ 6	30/17
	TOTAL (MBTU)	196.277	70.961	21.116
OCT	PEAK (KBTU)	375.296	771.642	46.013
	DY/HR	28/ 8	21/ 6	31/17
	TOTAL (MBTU)	198.096	151.178	20.680
NOV	PEAK (KBTU)	389.781	1394.402	46.013
	DY/HR	29/10	28/ 7	30/17
	TOTAL (MBTU)	208.527	281.994	21.262
DEC	PEAK (KBTU)	389.781	1503.113	46.013
	DY/HR	30/14	5/ 7	30/17
	ONE YEAR	2387.043	1959.736	250.486
	USE/PEAK	389.781	1612.407	46.013

LDL PROCESSOR INPUT DATA

3/18/1995 16:49:57 LDL RUN 1

```

* 3 *
* 4 *
* 5 *
* 6 *          $-----$
* 7 *          $EZ - DOE LOADS INPUT $
* 8 *          $-----$
* 9 *
* 10 *          $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 16 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT HOURLY-DATA-SAVE = YES ..
* 21 * BUILDING-LOCATION HOLIDAY = NO
* 22 * X-REF = 0.0
* 23 * Y-REF = 0.0 ..
* 24 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 25 *
* 26 *
* 27 *          $ SCHEDULES
* 28 *
* 29 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 30 *
* 31 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 32 *
* 33 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.1)
* 34 * (6,7) (0.35)
* 35 * (8,9) (0.5,0.6)
* 36 * (10,11) (0.75)
* 37 * (12) (0.5)
* 38 * (13,14) (0.75)
* 39 * (15) (0.5)
* 40 * (16,18) (0.4)
* 41 * (19,20) (0.3,0.23)
* 42 * (21,24) (0.1) ..
* 43 *
* 44 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 45 * (7,19) (0.07)
* 46 * (20,24) (0.23) ..
* 47 *
* 48 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 49 * (6,7) (0.1,0.5)
* 50 * (8,11) (1.)
* 51 * (12) (0.8)
* 52 * (13,16) (1.)
* 53 * (17,20) (0.5)
* 54 * (21,24) (0.) ..
* 55 *
* 56 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 57 * (6,7) (0.1,0.2)
* 58 * (8,9) (0.3)
* 59 * (10,11) (0.4,0.7)
* 60 * (12,13) (0.4)
* 61 * (14,15) (0.8)
* 62 * (16,18) (0.7,0.3,0.1)
* 63 * (19,24) (0.05) ..
* 64 *
* 65 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 66 * (8) (1.)
* 67 * (9,16) (0.1)
* 68 * (17) (1.)
* 69 * (18,24) (0.1) ..
* 70 *
* 71 * DHW_D =DAY-SCHEDULE (1,5) (0.)
* 72 * (6,10) (0.1,0.3,0.4,0.5,0.15)
* 73 * (11) (0.25)
* 74 * (12,13) (0.7)
* 75 * (14,15) (0.5)
* 76 * (16,20) (0.8,1.,0.4,0.3,0.1)
* 77 * (21,24) (0.) ..
* 78 *
* 79 *
* 80 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 81 *
* 82 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 83 *
* 84 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 85 * (WEH) LT_ON_WKND ..
* 86 *
* 87 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 88 * (WEH) FULL_OFF_D ..
* 89 *
* 90 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 91 * (WEH) FULL_OFF_D ..
* 92 *
* 93 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 94 * (WEH) FULL_OFF_D ..
* 95 *
* 96 * DHW_W =WEEK-SCHEDULE (WD) DHW_D
* 97 * (WEH) FULL_OFF_D ..
* 98 *
* 99 *
* 100 * $ FULL ON SCHEDULE
* 101 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 102 *

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* 103 * $ FULL OFF SCHEDULE
* 104 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 105 *
* 106 * $ LIGHTING SCHEDULE
* 107 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 108 *
* 109 * $ OCCUPANCY SCHEDULE
* 110 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 111 *
* 112 * $ EQUIPMENT SCHEDULE
* 113 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 114 *
* 115 * $ SHOP INFILTRATION SCHED
* 116 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IPL_W ..
* 117 *
* 118 * $ HOURS POOL IS HEATED
* 119 * POOL_HEAT =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 120 *
* 121 * $ DHW SCHEDULE
* 122 * DHW_SCHD =SCHEDULE THRU DEC 31 DHW_W ..
* 123 *
* 124 * POOL_VENT =SCHEDULE THRU MAY 15 FULL_OFF_W
* 125 * THRU OCT 1 FULL_ON_W
* 126 * THRU DEC 31 FULL_OFF_W ..
* 127 *
* 128 *
* 129 *
* 130 * $ CONSTRUCTION TYPES
* 131 *
* 132 *
* 133 *
* 134 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 135 *
* 136 * $ ADMINISTRATION ROOF CONSTRUCTION
* 137 * ADMROOF =CONSTRUCTION LAYERS = ASHR-17 ..
* 138 *
* 139 * $ ROOF CONSTRUCTION
* 140 * ROOFCON =CONSTRUCTION U-VALUE = 0.060 ..
* 141 * WALLCON =CONSTRUCTION U-VALUE = 0.055 ..
* 142 * INWALL =CONSTRUCTION U-VALUE = 0.500 ..
* 143 * DOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 144 * GLSSWALL =CONSTRUCTION U-VALUE = 1.130 ..
* 145 *
* 146 * G_TYPE1 =GLASS-TYPE SHADING-COEFF = 1.000
* 147 * PANES = 1
* 148 * GLASS-CONDUCTANCE = 1.130 ..
* 149 *
* 150 *
* 151 *
* 152 *
* 153 * $ SPACE DESCRIPTION
* 154 *
* 155 * GYM =SPACE AREA = 10518.0 VOLUME = 399684.0
* 156 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 157 * NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 1350.0
* 158 * LIGHTING-TYPE = INCAND LIGHTING-KW = 6.9
* 159 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 160 * EQUIP-SCHEDULE = EQUIP_SCHD INF-METHOD = AIR-CHANGE
* 161 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 162 *
* 163 * ROOF HEIGHT = 96.0 WIDTH = 112.0 CONS = ROOFCON
* 164 * TILT = 0 ..
* 165 *
* 166 * U-W HEIGHT = 96.0 WIDTH = 112.0 CONS = FLOORCON ..
* 167 *
* 168 * E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON
* 169 * AZIMUTH = 0 ..
* 170 *
* 171 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = DOORCON
* 172 * MULTIPLIER = 2.0 ..
* 173 *
* 174 * E-W HEIGHT = 38.0 WIDTH = 96.0 CONS = WALLCON
* 175 * AZIMUTH = 90 ..
* 176 *
* 177 * E-W HEIGHT = 38.0 WIDTH = 74.0 CONS = WALLCON
* 178 * AZIMUTH = 180 ..
* 179 *
* 180 *
* 181 * RCQT_&_WT =SPACE AREA = 2974.0 VOLUME = 47584.0
* 182 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 183 * NUMBER-OF-PEOPLE = 40.0 PEOPLE-HEAT-GAIN = 1350.0
* 184 * LIGHTING-TYPE = INCAND LIGHTING-KW = 2.3
* 185 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 186 * EQUIP-SCHEDULE = EQUIP_SCHD INF-METHOD = AIR-CHANGE
* 187 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 188 *
* 189 * ROOF HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON
* 190 * TILT = 0 ..
* 191 *
* 192 * U-W HEIGHT = 76.5 WIDTH = 38.9 CONS = ROOFCON ..
* 193 *
* 194 *
* 195 * LOBBY&OFFC =SPACE AREA = 10428.0 VOLUME = 83424.0
* 196 * ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = PEOPLE_SCH
* 197 * NUMBER-OF-PEOPLE = 100.0 PEOPLE-HEAT-GAIN = 800.0
* 198 * LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-KW = 2.0
* 199 * LIGHTING-SCHEDULE = LIGHT_SCHD
* 200 * EQUIP-SCHEDULE = EQUIP_SCHD
* 201 * SOURCE-SCHEDULE = DHW_SCHD SOURCE-TYPE = HOT-WATER
* 202 * SOURCE-BTU/HR = 16000.0 SOURCE-SENSIBLE = 0.3
* 203 * SOURCE-LATENT = 0.1 INF-METHOD = AIR-CHANGE
* 204 * AIR-CHANGES/HR = 0.05 INF-SCHEDULE = FULL_ON ..
* 205 *
* 206 * ROOF HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON
* 207 * TILT = 0 ..
* 208 *
* 209 * U-W HEIGHT = 100.0 WIDTH = 104.3 CONS = ROOFCON ..
* 210 *

```



```

* 211 *      E-W      HEIGHT = 10.0  WIDTH = 197.1  CONS = WALLCON
* 212 *      AZIMUTH = 0      ..
* 213 *
* 214 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 215 *      MULTIPLIER = 7.0      ..
* 216 *
* 217 *      E-W      HEIGHT = 10.0  WIDTH = 52.0   CONS = WALLCON
* 218 *      AZIMUTH = 90      ..
* 219 *
* 220 *      E-W      HEIGHT = 10.0  WIDTH = 80.8   CONS = WALLCON
* 221 *      AZIMUTH = 180     ..
* 222 *
* 223 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 224 *      MULTIPLIER = 4.0      ..
* 225 *
* 226 *      E-W      HEIGHT = 10.0  WIDTH = 70.4   CONS = WALLCON
* 227 *      AZIMUTH = 270     ..
* 228 *
* 229 *      I-W      HEIGHT = 10.0  WIDTH = 114.0  CONS = GLSSWALL
* 230 *      AZIMUTH = 270     NEXT-TO = POOL      ..
* 231 *
* 232 *
* 233 * POOL      =SPACE  AREA = 8237.0  VOLUME = 296532.0
* 234 *      TEMPERATURE = (80.)  ZONE-TYPE = CONDITIONED
* 235 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 236 *      PEOPLE-HEAT-GAIN = 800.0  LIGHTING-TYPE = INCAND
* 237 *      LIGHTING-KW = 3.0  LIGHTING-SCHEDULE = LIGHT_SCHD
* 238 *      EQUIP-SCHEDULE = POOL_HEAT  EQUIPMENT-KW = 46.65
* 239 *      EQUIP-SENSIBLE = 0.5  FLOOR-WEIGHT = 200.
* 240 *      FURNITURE-TYPE = HEAVY  FURN-WEIGHT = 15.
* 241 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 2.0
* 242 *      INF-SCHEDULE = POOL_VENT      ..
* 243 *
* 244 *      ROOF      HEIGHT = 108.7  WIDTH = 109.8  CONS = ROOFCON
* 245 *      TILT = 0      ..
* 246 *
* 247 *      U-W      HEIGHT = 108.7  WIDTH = 109.8  CONS = FLOORCON ..
* 248 *
* 249 *      E-W      HEIGHT = 36.0   WIDTH = 109.8  CONS = WALLCON
* 250 *      AZIMUTH = 180     ..
* 251 *
* 252 *      E-W      HEIGHT = 36.0   WIDTH = 108.7  CONS = WALLCON
* 253 *      AZIMUTH = 270     ..
* 254 *
* 255 *      DOOR      HEIGHT = 7.5   WIDTH = 3.0   CONS = DOORCON
* 256 *      MULTIPLIER = 2.0      ..
* 257 *
* 258 *
* 259 *      END      ..
* 260 *      COMPUTE LOADS      ..
* 261 *
* 262 *      INPUT SYSTEMS      ..

```

SDL PROCESSOR INPUT DATA

3/18/1995 16:49:57 SDL RUN 1

```

* 263 *
* 264 *
* 265 *
* 266 *
* 267 *
* 268 *
* 269 *
* 270 *
* 271 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 272 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 273 * LINE-3 * DENVER, CO 80227 *
* 274 *
* 275 * LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 276 * LINE-5 *MODEL WITH SET BACK AND DDC *
* 277 * ABORT ERRORS ..
* 278 * DIAGNOSTIC WARNINGS ..
* 279 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-H,SS-K)
* 280 * HOURLY-DATA-SAVE = YES ..
* 281 *
* 282 * $ SCHEDULES
* 283 *
* 284 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 285 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 286 * HEAT1_ON_D =DAY-SCHEDULE (1,24) (68.) ..
* 287 * HEAT2_ON_D =DAY-SCHEDULE (1,24) (80.) ..
* 288 * FAN_WSB_D =DAY-SCHEDULE (1,5) (0.)
* 289 * (6,19) (1.)
* 290 * (20,24) (0.) ..
* 291 * HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
* 292 * (6,19) (68.)
* 293 * (20,24) (50.) ..
* 294 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 295 * MOA.15_D =DAY-SCHEDULE (1,6) (0.)
* 296 * (7,19) (0.15)
* 297 * (20,24) (0.) ..
* 298 * MOA.21_D =DAY-SCHEDULE (1,6) (0.)
* 299 * (7,19) (0.21)
* 300 * (20,24) (0.) ..
* 301 *
* 302 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 303 *
* 304 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 305 *
* 306 * HEAT1_ON_W =WEEK-SCHEDULE (ALL) HEAT1_ON_D ..
* 307 *
* 308 * HEAT2_ON_W =WEEK-SCHEDULE (ALL) HEAT2_ON_D ..
* 309 *
* 310 * FAN_WSB_W =WEEK-SCHEDULE (WD) FAN_WSB_D
* 311 * (SAT) FULL_OFF_D
* 312 * (SUN) FULL_OFF_D
* 313 * (HOL) FAN_WSB_D ..
* 314 *
* 315 * HT68_WSB_W =WEEK-SCHEDULE (WD) HT68_WSB_D
* 316 * (SAT) FULL_OFF_D
* 317 * (SUN) FULL_OFF_D
* 318 * (HOL) HT68_WSB_D ..
* 319 *
* 320 * MOA.15_W =WEEK-SCHEDULE (WD) MOA.15_D
* 321 * (SAT) FULL_OFF_D
* 322 * (SUN) FULL_OFF_D
* 323 * (HOL) MOA.15_D ..
* 324 *
* 325 * MOA.21_W =WEEK-SCHEDULE (WD) MOA.21_D
* 326 * (SAT) FULL_OFF_D
* 327 * (SUN) FULL_OFF_D
* 328 * (HOL) MOA.21_D ..
* 329 *
* 330 *
* 331 * $ FULL ON SCHEDULE
* 332 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 333 *
* 334 * $ FULL OFF SCHEDULE
* 335 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 336 *
* 337 * $ HEAT SCHEDULE, 68 DEG
* 338 * HEAT68_ON =SCHEDULE THRU DEC 31 HEAT1_ON_W ..
* 339 *
* 340 * $ HEAT SCHEDULE 80 DEG
* 341 * HEAT80_ON =SCHEDULE THRU DEC 31 HEAT2_ON_W ..
* 342 *
* 343 * $ HEATING HOURS SCHEDULE
* 344 * HEAT_HRS =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 345 *
* 346 * $ FAN SCHED W SET BACK
* 347 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 348 *
* 349 * $ HEAT SCHD WITH SET BACK
* 350 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 351 *
* 352 * MOA_.15_FV =SCHEDULE THRU DEC 31 MOA.15_W ..
* 353 *
* 354 * MOA_.21_FV =SCHEDULE THRU DEC 31 MOA.21_W ..
* 355 *
* 356 *
* 357 *
* 358 * $ ZONE DESCRIPTION
* 359 *
* 360 * GYM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 361 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 362 * THERMOSTAT-TYPE = PROPORTIONAL

```

```

* 363 *      BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 28950.
* 364 *      OUTSIDE-AIR-CFM = 4343. SIZING-OPTION = FROM-LOADS
* 365 *      RATED-CFM = 28950.0 MIN-CFM-RATIO = 1.0
* 366 *      EXHAUST-CFM = 4343.0 HEATING-CAPACITY = -625320.0 ..
* 367 *
* 368 * RCQT_&_WT =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 369 *      HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 370 *      THERMOSTAT-TYPE = PROPORTIONAL
* 371 *      BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 9280.
* 372 *      OUTSIDE-AIR-CFM = 1392. SIZING-OPTION = FROM-LOADS
* 373 *      RATED-CFM = 9280.0 MIN-CFM-RATIO = 1.0
* 374 *      EXHAUST-CFM = 1392.0 HEATING-CAPACITY = -159516.0 ..
* 375 *
* 376 * LOBBY&OFFC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 377 *      HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 378 *      THERMOSTAT-TYPE = PROPORTIONAL
* 379 *      BASEBOARD-CTRL = THERMOSTATIC
* 380 *      BASEBOARD-RATING = -44300. ASSIGNED-CFM = 6595.
* 381 *      OUTSIDE-AIR-CFM = 1350. SIZING-OPTION = FROM-LOADS
* 382 *      RATED-CFM = 6595.0 MIN-CFM-RATIO = 1.0
* 383 *      EXHAUST-CFM = 1350.0 HEATING-CAPACITY = -280247.0 ..
* 384 *
* 385 * POOL =ZONE DESIGN-HEAT-T = 80.0 DESIGN-COOL-T = 90.0
* 386 *      HEAT-TEMP-SCH = HEAT80_ON ZONE-TYPE = CONDITIONED
* 387 *      THERMOSTAT-TYPE = PROPORTIONAL
* 388 *      BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 24620.
* 389 *      OUTSIDE-AIR-CFM = 1585. SIZING-OPTION = FROM-LOADS
* 390 *      RATED-CFM = 24620.0 MIN-CFM-RATIO = 1.0
* 391 *      EXHAUST-CFM = 1585.0 HEATING-CAPACITY = -327413.0 ..
* 392 *
* 393 *
* 394 * $ SYSTEM DESCRIPTION
* 395 *
* 396 * HV_1 =SYSTEM SYSTEM-TYPE = HVSYS
* 397 *      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HEAT68_ON
* 398 *      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 399 *      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 400 *      SUPPLY-CFM = 38230. RETURN-CFM = 32400.
* 401 *      RATED-CFM = 38230. MIN-OUTSIDE-AIR = 0.15
* 402 *      MIN-AIR-SCH = MOA_15_FV FAN-SCHEDULE = FAN_W_SB
* 403 *      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 404 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 405 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 406 *      HEATING-CAPACITY = -784836. FURNACE-AUX = 0.
* 407 *      RETURN-AIR-PATH = DUCT
* 408 *      ZONE-NAMES = (GYM, RCQT_&_WT) ..
* 409 *
* 410 * HV_2 =SYSTEM SYSTEM-TYPE = HVSYS
* 411 *      MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = HEAT80_ON
* 412 *      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 413 *      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 414 *      SUPPLY-CFM = 24620. RETURN-CFM = 23036.
* 415 *      RATED-CFM = 24620. MIN-OUTSIDE-AIR = 0.06
* 416 *      FAN-SCHEDULE = HEAT_HRS SUPPLY-DELTA-T = 2.4
* 417 *      SUPPLY-KW = 0.00039
* 418 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 419 *      NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 420 *      HEATING-CAPACITY = -327413. FURNACE-AUX = 0.
* 421 *      ZONE-NAMES = (POOL) ..
* 422 *
* 423 * HV_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 424 *      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = HEAT68_ON
* 425 *      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 426 *      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 427 *      SUPPLY-CFM = 6595. RETURN-CFM = 5245.
* 428 *      RATED-CFM = 6595. MIN-OUTSIDE-AIR = 0.21
* 429 *      MIN-AIR-SCH = MOA_21_FV FAN-SCHEDULE = FAN_W_SB
* 430 *      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 431 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 432 *      HEATING-CAPACITY = -280247. FURNACE-AUX = 0.
* 433 *      ZONE-NAMES = (LOBBY&OFFC) ..
* 434 *
* 435 * END ..
* 436 * COMPUTE SYSTEMS ..
* 437 *
* 438 * INPUT PLANT ..

```

P D L P R O C E S S O R I N P U T D A T A

3/18/1995 16:49:57 PDL RUN 1

```

* 439 *
* 440 *
* 441 *      $-----$
* 442 *      $ E Z - D O E   P L A N T S   I N P U T $
* 443 *      $-----$
* 444 *
* 445 *      $ GENERAL PROJECT DATA
* 446 *
* 447 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.      *
* 448 *          LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 449 *          LINE-3 *      DENVER,      CO      80227      *
* 450 *
* 451 *          LINE-4 *BUILDING 4305 PHYSICAL FITNESS CENTER *
* 452 *          LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 453 *
* 454 * ABORT      ERRORS ..
* 455 * DIAGNOSTIC  WARNINGS ..
* 456 * PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)
* 457 *
* 458 *          HOURLY-DATA-SAVE = YES ..
* 459 *
* 460 *      $ SCHEDULES
* 461 *
* 462 *
* 463 *
* 464 *
* 465 *
* 466 *      $ EQUIPMENT DESCRIPTION
* 467 *
* 468 * B1_&_B2      =PLANT-EQUIPMENT  TYPE = HW-BOILER
* 469 *          SIZE = 1.6  INSTALLED-NUMBER = 2
* 470 *          MAX-NUMBER-AVAIL = 2 ..
* 471 *
* 472 * DHW          =PLANT-EQUIPMENT  TYPE = DHW-HEATER
* 473 *          SIZE = 0.4  INSTALLED-NUMBER = 2
* 474 *          MAX-NUMBER-AVAIL = 2 ..
* 475 *
* 476 * PLANT-PARAMETERS  MAKEUP-WTR-T = 180.  CCIRC-HEAD = 63.0
* 477 *          HCIRC-DESIGN-T-DROP = 20.0 ..
* 478 *
* 479 *
* 480 * ENERGY-RESOURCE  RESOURCE = ELECTRICITY ..
* 481 * ENERGY-RESOURCE  RESOURCE = FUEL-OIL ..
* 482 * ENERGY-RESOURCE  RESOURCE = NATURAL-GAS ..
* 483 *
* 484 *
* 485 *
* 486 * END ..
* 487 * COMPUTE PLANT ..
* 488 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	92.54	1,963.69	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	776.25	0.00	0.00
DOM HOT WTR	0.00	0.00	250.49
AUX SOLAR	0.00	0.00	0.00
LIGHTS	123.73	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	1,394.83	0.00	0.00
	-----	-----	-----
TOTAL	2,387.35	1,963.69	250.49

TOTAL SITE ENERGY 4601.41 MBTU 143.1 KBTU/SQFT-YR GROSS-AREA 143.1 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 9383.03 MBTU 291.8 KBTU/SQFT-YR GROSS-AREA 291.8 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.1  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	ELECTRICITY	FUEL-OIL	NATURAL-GAS
	TOTAL (MBTU)	209.605	373.990	21.116
JAN	PEAK (KBTU)	389.781	1612.448	46.013
	DY/HR	31/14	26/ 6	31/17
	TOTAL (MBTU)	189.923	278.490	19.223
FEB	PEAK (KBTU)	389.781	1542.173	46.013
	DY/HR	28/14	14/ 7	28/17
	TOTAL (MBTU)	209.472	254.610	21.408
MAR	PEAK (KBTU)	389.781	1487.953	46.013
	DY/HR	28/14	28/ 7	31/17
	TOTAL (MBTU)	193.156	100.634	20.534
APR	PEAK (KBTU)	388.876	1061.655	46.013
	DY/HR	4/10	4/ 6	29/17
	TOTAL (MBTU)	201.659	142.682	21.262
MAY	PEAK (KBTU)	389.781	1373.095	46.013
	DY/HR	20/11	16/ 6	31/17
	TOTAL (MBTU)	191.852	60.398	20.680
JUN	PEAK (KBTU)	386.699	596.427	46.013
	DY/HR	7/14	7/14	30/17
	TOTAL (MBTU)	193.461	46.163	21.116
JUL	PEAK (KBTU)	367.484	555.144	46.013
	DY/HR	8/10	24/14	29/17
	TOTAL (MBTU)	198.223	55.140	21.408
AUG	PEAK (KBTU)	378.053	586.569	46.013
	DY/HR	24/10	6/24	31/17
	TOTAL (MBTU)	196.923	145.992	20.680
SEP	PEAK (KBTU)	389.781	902.635	46.013
	DY/HR	23/14	23/ 6	30/17
	TOTAL (MBTU)	196.289	71.182	21.116
OCT	PEAK (KBTU)	375.448	772.229	46.013
	DY/HR	28/ 8	21/ 6	31/17
	TOTAL (MBTU)	198.121	151.723	20.680
NOV	PEAK (KBTU)	389.781	1396.758	46.013
	DY/HR	29/10	28/ 7	30/17
	TOTAL (MBTU)	208.543	282.690	21.262
DEC	PEAK (KBTU)	389.781	1504.624	46.013
	DY/HR	30/14	5/ 7	30/17
	ONE YEAR	2387.227	1963.694	250.486
	USE/PEAK	389.781	1612.448	46.013

**COMPUTER SIMULATIONS**

BUILDING 4530

**COMPUTER SIMULATIONS**  
BUILDING 4530

BASE RUN



# LDL PROCESSOR INPUT DATA

3/18/1995 16:52:17 LDL RUN 1

```

* 3 *
* 4 *
* 5 *      $-----$
* 6 *      $EZ-DOE LOADS INPUT$
* 7 *      $-----$
* 8 *
* 9 *      $ GENERAL PROJECT DATA
* 10 *
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4530, SMA BUILDING *
* 16 * LINE-5 *BASE MODEL *..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D)
* 21 * HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION HOLIDAY = NO
* 23 * X-REF = 0.0
* 24 * Y-REF = 0.0 ..
* 25 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 *      $ SCHEDULES
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
* 35 *      (6,7) (0.35)
* 36 *      (8,9) (0.5,0.6)
* 37 *      (10,11) (0.75)
* 38 *      (12) (0.5)
* 39 *      (13,14) (0.75)
* 40 *      (15) (0.5)
* 41 *      (16,18) (0.4)
* 42 *      (19) (0.3)
* 43 *      (20,24) (0.23) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)

```

\* 46 \* (7,19) (0.07)  
 \* 47 \* (20,24) (0.23) ..  
 \* 48 \*  
 \* 49 \* PEOPLE\_D =DAY-SCHEDULE (1,5) (0.)  
 \* 50 \* (6,7) (0.1,0.5)  
 \* 51 \* (8,11) (1.)  
 \* 52 \* (12) (0.8)  
 \* 53 \* (13,16) (1.)  
 \* 54 \* (17,18) (0.5,0.1)  
 \* 55 \* (19,24) (0.) ..  
 \* 56 \*  
 \* 57 \* EQUIP\_ON\_D =DAY-SCHEDULE (1,5) (0.05)  
 \* 58 \* (6,7) (0.1,0.2)  
 \* 59 \* (8,9) (0.3)  
 \* 60 \* (10,11) (0.4,0.7)  
 \* 61 \* (12,13) (0.4)  
 \* 62 \* (14,15) (0.8)  
 \* 63 \* (16,18) (0.7,0.3,0.1)  
 \* 64 \* (19,24) (0.05) ..  
 \* 65 \*  
 \* 66 \* SHOP\_INF\_D =DAY-SCHEDULE (1,7) (0.1)  
 \* 67 \* (8) (1.)  
 \* 68 \* (9,16) (0.1)  
 \* 69 \* (17) (1.)  
 \* 70 \* (18,24) (0.1) ..  
 \* 71 \*  
 \* 72 \*  
 \* 73 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 74 \*  
 \* 75 \* FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 \* 76 \*  
 \* 77 \* LIGHT\_ON\_W =WEEK-SCHEDULE (WD) LIGHT\_ON\_D  
 \* 78 \* (WEH) LT\_ON\_WKND ..  
 \* 79 \*  
 \* 80 \* PEOPLE\_W =WEEK-SCHEDULE (WD) PEOPLE\_D  
 \* 81 \* (WEH) FULL\_OFF\_D ..  
 \* 82 \*  
 \* 83 \* EQUIP\_W =WEEK-SCHEDULE (WD) EQUIP\_ON\_D  
 \* 84 \* (WEH) FULL\_OFF\_D ..  
 \* 85 \*  
 \* 86 \* SHOP\_IFL\_W =WEEK-SCHEDULE (WD) SHOP\_INF\_D  
 \* 87 \* (WEH) FULL\_OFF\_D ..  
 \* 88 \*  
 \* 89 \*  
 \* 90 \* \$ FULL ON SCHEDULE  
 \* 91 \* FULL\_ON =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 92 \*  
 \* 93 \* \$ FULL OFF SCHEDULE  
 \* 94 \* FULL\_OFF =SCHEDULE THRU DEC 31 FULL\_OFF\_W ..  
 \* 95 \*

```

* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE
* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ SHOP INFILTRATION SCHED
* 106 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 107 *
* 108 *
* 109 *
* 110 *          $ CONSTRUCTION TYPES
* 111 *
* 112 *
* 113 *
* 114 * FLOORCON =CONSTRUCTION  U-VALUE = 0.010 ..
* 115 *
* 116 * $ ROOF CONSTRUCITON
* 117 * ROOFCON =CONSTRUCTION  U-VALUE = 0.030 ..
* 118 *
* 119 * $ WALL CONSTRUCITON
* 120 * WALL_CON =CONSTRUCTION  U-VALUE = 0.010 ..
* 121 * LDOORCON =CONSTRUCTION  U-VALUE = 0.400 ..
* 122 * SDOORCON =CONSTRUCTION  U-VALUE = 1.000 ..
* 123 *
* 124 * G_TYPE1 =GLASS-TYPE  SHADING-COEF = 1.000
* 125 *          PANES = 1
* 126 *          GLASS-CONDUCTANCE = 1.130 ..
* 127 *
* 128 *
* 129 *
* 130 *
* 131 *          $ SPACE DESCRIPTION
* 132 *
* 133 * ADMIN&TOOL =SPACE  AREA = 14228.0  VOLUME = 128052.0
* 134 *          TEMPERATURE = (68.)  ZONE-TYPE = CONDITIONED
* 135 *          PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 136 *          PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 137 *          PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 138 *          LIGHTING-KW = 22.9  LIGHTING-SCHEDULE = LIGHT_SCHD
* 139 *          SOURCE-SCHEDULE = FULL_ON  SOURCE-TYPE = HOT-WATER
* 140 *          SOURCE-BTU/HR = 23630.0  SOURCE-SENSIBLE = 0.0
* 141 *          INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 142 *          INF-SCHEDULE = FULL_ON ..
* 143 *
* 144 *          U-W  HEIGHT = 110.0  WIDTH = 129.5  CONS = FLOORCON ..
* 145 *

```

\* 146 \*      ROOF    HEIGHT = 110.0   WIDTH = 129.5   CONS = ROOFCON  
 \* 147 \*            TILT = 0   ..  
 \* 148 \*  
 \* 149 \*      E-W    HEIGHT = 9.0   WIDTH = 129.5   CONS = WALL\_CON  
 \* 150 \*            AZIMUTH = 0   ..  
 \* 151 \*  
 \* 152 \*      WINDOW HEIGHT = 4.0   WIDTH = 2.0   G-T = G\_TYPE1  
 \* 153 \*            MULTIPLIER = 13.0   ..  
 \* 154 \*  
 \* 155 \*      DOOR    HEIGHT = 7.5   WIDTH = 3.0   CONS = SDOORCON  
 \* 156 \*            MULTIPLIER = 3.0   ..  
 \* 157 \*  
 \* 158 \*      E-W    HEIGHT = 9.0   WIDTH = 86.0   CONS = WALL\_CON  
 \* 159 \*            AZIMUTH = 0   ..  
 \* 160 \*  
 \* 161 \*      WINDOW HEIGHT = 4.0   WIDTH = 4.0   G-T = G\_TYPE1  
 \* 162 \*            MULTIPLIER = 12.0   ..  
 \* 163 \*  
 \* 164 \*      DOOR    HEIGHT = 7.5   WIDTH = 2.0   CONS = SDOORCON  
 \* 165 \*            MULTIPLIER = 2.0   ..  
 \* 166 \*  
 \* 167 \*  
 \* 168 \* VEH\_MNT    =SPACE   AREA = 33660.0   VOLUME = 1000000.0  
 \* 169 \*            TEMPERATURE = (60.)   ZONE-TYPE = CONDITIONED  
 \* 170 \*            PEOPLE-SCHEDULE = PEOPLE\_SCH   NUMBER-OF-PEOPLE = 50.0  
 \* 171 \*            PEOPLE-HEAT-GAIN = 450.0   PEOPLE-HG-LAT = 0.2  
 \* 172 \*            PEOPLE-HG-SENS = 0.8   LIGHTING-TYPE = INCAND  
 \* 173 \*            LIGHTING-KW = 14.15   LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 174 \*            INF-METHOD = AIR-CHANGE   AIR-CHANGES/HR = 1.0  
 \* 175 \*            INF-SCHEDULE = FULL\_ON   ..  
 \* 176 \*  
 \* 177 \*      U-W    HEIGHT = 165.0   WIDTH = 204.0   CONS = FLOORCON ..  
 \* 178 \*  
 \* 179 \*      ROOF    HEIGHT = 165.0   WIDTH = 204.0   CONS = ROOFCON  
 \* 180 \*            TILT = 0   ..  
 \* 181 \*  
 \* 182 \*      E-W    HEIGHT = 32.5   WIDTH = 204.0   CONS = WALL\_CON  
 \* 183 \*            AZIMUTH = 0   ..  
 \* 184 \*  
 \* 185 \*      DOOR    HEIGHT = 14.0   WIDTH = 27.0   CONS = LDOORCON  
 \* 186 \*            MULTIPLIER = 6.0   ..  
 \* 187 \*  
 \* 188 \*      DOOR    HEIGHT = 7.5   WIDTH = 3.0   CONS = SDOORCON  
 \* 189 \*            MULTIPLIER = 3.0   ..  
 \* 190 \*  
 \* 191 \*      E-W    HEIGHT = 32.5   WIDTH = 204.0   CONS = WALL\_CON  
 \* 192 \*            AZIMUTH = 180   ..  
 \* 193 \*  
 \* 194 \*      DOOR    HEIGHT = 14.0   WIDTH = 27.0   CONS = LDOORCON  
 \* 195 \*            MULTIPLIER = 6.0   ..

\* 196 \*  
 \* 197 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 198 \* MULTIPLIER = 3.0 ..  
 \* 199 \*  
 \* 200 \*  
 \* 201 \* PAINT&CUR. =SPACE AREA = 29040.0 VOLUME = 943800.0  
 \* 202 \* TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED  
 \* 203 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 204 \* PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2  
 \* 205 \* PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = INCAND  
 \* 206 \* LIGHTING-KW = 8.1 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 207 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.96  
 \* 208 \* INF-SCHEDULE = FULL\_ON ..  
 \* 209 \*  
 \* 210 \* U-W HEIGHT = 165.0 WIDTH = 176.0 CONS = FLOORCON ..  
 \* 211 \*  
 \* 212 \* ROOF HEIGHT = 165.0 WIDTH = 176.0 CONS = ROOFCON  
 \* 213 \* TILT = 0 ..  
 \* 214 \*  
 \* 215 \* E-W HEIGHT = 32.5 WIDTH = 176.0 CONS = WALL\_CON  
 \* 216 \* AZIMUTH = 0 ..  
 \* 217 \*  
 \* 218 \* DOOR HEIGHT = 14.0 WIDTH = 27.0 CONS = LDOORCON  
 \* 219 \* MULTIPLIER = 5.0 ..  
 \* 220 \*  
 \* 221 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 222 \* MULTIPLIER = 2.0 ..  
 \* 223 \*  
 \* 224 \* E-W HEIGHT = 32.5 WIDTH = 176.0 CONS = WALL\_CON  
 \* 225 \* AZIMUTH = 180 ..  
 \* 226 \*  
 \* 227 \* DOOR HEIGHT = 14.0 WIDTH = 27.0 CONS = LDOORCON  
 \* 228 \* MULTIPLIER = 5.0 ..  
 \* 229 \*  
 \* 230 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 231 \* MULTIPLIER = 2.0 ..  
 \* 232 \*  
 \* 233 \* E-W HEIGHT = 32.5 WIDTH = 165.0 CONS = WALL\_CON  
 \* 234 \* AZIMUTH = 270 ..  
 \* 235 \*  
 \* 236 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 237 \* MULTIPLIER = 3.0 ..  
 \* 238 \*  
 \* 239 \*  
 \* 240 \* VEH\_BOD\_SH =SPACE AREA = 14628.0 VOLUME = 475410.0  
 \* 241 \* TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED  
 \* 242 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 243 \* PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2  
 \* 244 \* PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = INCAND  
 \* 245 \* LIGHTING-KW = 6.8 LIGHTING-SCHEDULE = LIGHT\_SCHD

\* 246 \*           INF-METHOD = AIR-CHANGE   AIR-CHANGES/HR = 0.43  
 \* 247 \*           INF-SCHEDULE = FULL\_ON ..  
 \* 248 \*  
 \* 249 \*       U-W    HEIGHT = 69.0   WIDTH = 212.0   CONS = FLOORCON ..  
 \* 250 \*  
 \* 251 \*       ROOF   HEIGHT = 69.0   WIDTH = 212.0   CONS = ROOFCON  
 \* 252 \*           TILT = 0 ..  
 \* 253 \*  
 \* 254 \*       E-W    HEIGHT = 32.5   WIDTH = 212.0   CONS = WALL\_CON  
 \* 255 \*           AZIMUTH = 0 ..  
 \* 256 \*  
 \* 257 \*       DOOR   HEIGHT = 14.0   WIDTH = 27.0   CONS = LDOORCON  
 \* 258 \*           MULTIPLIER = 4.0 ..  
 \* 259 \*  
 \* 260 \*       DOOR   HEIGHT = 7.5   WIDTH = 3.0   CONS = SDOORCON  
 \* 261 \*           MULTIPLIER = 2.0 ..  
 \* 262 \*  
 \* 263 \*       E-W    HEIGHT = 32.5   WIDTH = 212.0   CONS = WALL\_CON  
 \* 264 \*           AZIMUTH = 180 ..  
 \* 265 \*  
 \* 266 \*       DOOR   HEIGHT = 14.0   WIDTH = 27.0   CONS = LDOORCON  
 \* 267 \*           MULTIPLIER = 5.0 ..  
 \* 268 \*  
 \* 269 \*       DOOR   HEIGHT = 7.5   WIDTH = 3.0   CONS = SDOORCON  
 \* 270 \*           MULTIPLIER = 3.0 ..  
 \* 271 \*  
 \* 272 \*       E-W    HEIGHT = 32.5   WIDTH = 69.0   CONS = WALL\_CON  
 \* 273 \*           AZIMUTH = 270 ..  
 \* 274 \*  
 \* 275 \*       DOOR   HEIGHT = 7.5   WIDTH = 3.0   CONS = SDOORCON  
 \* 276 \*           MULTIPLIER = 2.0 ..  
 \* 277 \*  
 \* 278 \*  
 \* 279 \*   ADMIN&ELEC =SPACE   AREA = 10085.0   VOLUME = 90765.0  
 \* 280 \*           TEMPERATURE = (68.)   ZONE-TYPE = CONDITIONED  
 \* 281 \*           PEOPLE-SCHEDULE = PEOPLE\_SCH   NUMBER-OF-PEOPLE = 40.0  
 \* 282 \*           PEOPLE-HEAT-GAIN = 450.0   PEOPLE-HG-LAT = 0.2  
 \* 283 \*           PEOPLE-HG-SENS = 0.8   LIGHTING-TYPE = REC-FLUOR-RV  
 \* 284 \*           LIGHTING-KW = 9.79   LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 285 \*           INF-METHOD = AIR-CHANGE   AIR-CHANGES/HR = 0.5  
 \* 286 \*           INF-SCHEDULE = FULL\_ON ..  
 \* 287 \*  
 \* 288 \*       U-W    HEIGHT = 83.0   WIDTH = 129.5   CONS = FLOORCON ..  
 \* 289 \*  
 \* 290 \*       ROOF   HEIGHT = 83.0   WIDTH = 129.5   CONS = ROOFCON  
 \* 291 \*           TILT = 0 ..  
 \* 292 \*  
 \* 293 \*       E-W    HEIGHT = 9.0   WIDTH = 125.0   CONS = WALL\_CON  
 \* 294 \*           AZIMUTH = 270 ..  
 \* 295 \*

\* 296 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 297 \* MULTIPLIER = 3.0 ..  
 \* 298 \*  
 \* 299 \* DOOR HEIGHT = 14.0 WIDTH = 14.5 CONS = LDOORCON ..  
 \* 300 \*  
 \* 301 \* DOOR HEIGHT = 9.0 WIDTH = 14.5 CONS = LDOORCON  
 \* 302 \* MULTIPLIER = 3.0 ..  
 \* 303 \*  
 \* 304 \*  
 \* 305 \* CANVAS&ARM =SPACE AREA = 21746.0 VOLUME = 130020.0  
 \* 306 \* TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED  
 \* 307 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 308 \* PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2  
 \* 309 \* PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = REC-FLUOR-RV  
 \* 310 \* LIGHTING-KW = 13.67 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 311 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 312 \* INF-SCHEDULE = FULL\_ON ..  
 \* 313 \*  
 \* 314 \* U-W HEIGHT = 84.0 WIDTH = 259.0 CONS = FLOORCON ..  
 \* 315 \*  
 \* 316 \* ROOF HEIGHT = 84.0 WIDTH = 259.0 CONS = ROOFCON  
 \* 317 \* TILT = 0 ..  
 \* 318 \*  
 \* 319 \* E-W HEIGHT = 9.0 WIDTH = 129.5 CONS = WALL\_CON  
 \* 320 \* AZIMUTH = 180 ..  
 \* 321 \*  
 \* 322 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 323 \* MULTIPLIER = 3.0 ..  
 \* 324 \*  
 \* 325 \* E-W HEIGHT = 25.0 WIDTH = 120.0 CONS = WALL\_CON  
 \* 326 \* AZIMUTH = 90 ..  
 \* 327 \*  
 \* 328 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 329 \* MULTIPLIER = 3.0 ..  
 \* 330 \*  
 \* 331 \*  
 \* 332 \* PAINT&DYN =SPACE AREA = 1775.0 VOLUME = 15975.0  
 \* 333 \* TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED  
 \* 334 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 15.0  
 \* 335 \* PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2  
 \* 336 \* PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = REC-FLUOR-RV  
 \* 337 \* LIGHTING-KW = 0.45 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 338 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 339 \* INF-SCHEDULE = FULL\_ON ..  
 \* 340 \*  
 \* 341 \* U-W HEIGHT = 22.0 WIDTH = 129.5 CONS = FLOORCON ..  
 \* 342 \*  
 \* 343 \* ROOF HEIGHT = 22.0 WIDTH = 129.5 CONS = ROOFCON  
 \* 344 \* TILT = 0 ..  
 \* 345 \*

\* 346 \*  
 \* 347 \* SHOPSUPPLY =SPACE AREA = 29641.0 VOLUME = 741025.0  
 \* 348 \* TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED  
 \* 349 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 350 \* PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2  
 \* 351 \* PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = REC-FLUOR-RV  
 \* 352 \* LIGHTING-KW = 4.7 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 353 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 354 \* INF-SCHEDULE = FULL\_ON ..  
 \* 355 \*  
 \* 356 \* U-W HEIGHT = 228.9 WIDTH = 129.5 CONS = FLOORCON ..  
 \* 357 \*  
 \* 358 \* ROOF HEIGHT = 228.5 WIDTH = 129.5 CONS = ROOFCON  
 \* 359 \* TILT = 0 ..  
 \* 360 \*  
 \* 361 \* E-W HEIGHT = 25.0 WIDTH = 211.0 CONS = WALL\_CON  
 \* 362 \* AZIMUTH = 0 ..  
 \* 363 \*  
 \* 364 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 365 \* MULTIPLIER = 2.0 ..  
 \* 366 \*  
 \* 367 \* DOOR HEIGHT = 8.0 WIDTH = 8.0 CONS = LDOORCON  
 \* 368 \* MULTIPLIER = 2.0 ..  
 \* 369 \*  
 \* 370 \*  
 \* 371 \* BATTERIES =SPACE AREA = 4705.0 VOLUME = 84690.0  
 \* 372 \* TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED  
 \* 373 \* PEOPLE-SCHEDULE = PEOPLE\_SCH NUMBER-OF-PEOPLE = 40.0  
 \* 374 \* PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2  
 \* 375 \* PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = REC-FLUOR-RV  
 \* 376 \* LIGHTING-KW = 11.08 LIGHTING-SCHEDULE = LIGHT\_SCHD  
 \* 377 \* INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5  
 \* 378 \* INF-SCHEDULE = FULL\_ON ..  
 \* 379 \*  
 \* 380 \* U-W HEIGHT = 39.2 WIDTH = 120.0 CONS = FLOORCON ..  
 \* 381 \*  
 \* 382 \* ROOF HEIGHT = 39.2 WIDTH = 120.0 CONS = ROOFCON  
 \* 383 \* TILT = 0 ..  
 \* 384 \*  
 \* 385 \* E-W HEIGHT = 18.0 WIDTH = 120.0 CONS = WALL\_CON  
 \* 386 \* AZIMUTH = 180 ..  
 \* 387 \*  
 \* 388 \* DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON  
 \* 389 \* MULTIPLIER = 2.0 ..  
 \* 390 \*  
 \* 391 \*  
 \* 392 \* PAINT\_BTHS =SPACE AREA = 3742.0 VOLUME = 44688.0  
 \* 393 \* TEMPERATURE = (72.) ZONE-TYPE = CONDITIONED  
 \* 394 \* AREA/PERSON = 100.0 INF-METHOD = NONE ..  
 \* 395 \*



```

* 396 *      U-W   HEIGHT = 61.2 WIDTH = 61.2 CONS = FLOORCON ..
* 397 *
* 398 *      ROOF  HEIGHT = 61.2 WIDTH = 61.2 CONS = ROOFCON
* 399 *          TILT = 0  ..
* 400 *
* 401 *
* 402 * END  ..
* 403 * COMPUTE LOADS ..
* 404 *
* 405 * INPUT SYSTEMS ..

```

# SDL PROCESSOR INPUT DATA

3/18/1995 16:52:17 SDL RUN 1

```

* 406 *
* 407 *
* 408 *      $-----$
* 409 *      $EZ-DOE SYSTEMS INPUT$
* 410 *      $-----$
* 411 *
* 412 *      $ GENERAL PROJECT DATA
* 413 *
* 414 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 415 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 416 * LINE-3 * DENVER, CO 80227 *
* 417 *
* 418 * LINE-4 *BUILDING 4530, SMA BUILDING *
* 419 * LINE-5 *BASE MODEL *..
* 420 * ABORT      ERRORS ..
* 421 * DIAGNOSTIC  WARNINGS ..
* 422 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-K)
* 423 *          HOURLY-DATA-SAVE = YES ..
* 424 *
* 425 *      $ SCHEDULES
* 426 *
* 427 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 428 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 429 * HEAT_H_D =DAY-SCHEDULE (1,6) (55.)
* 430 *          (7,17) (74.)
* 431 *          (18,24) (55.) ..
* 432 * HEAT_L_D =DAY-SCHEDULE (1,6) (47.)
* 433 *          (7,17) (60.)
* 434 *          (18,24) (47.) ..
* 435 * HEAT_68_D =DAY-SCHEDULE (1,24) (74.) ..
* 436 * HEAT_60_D =DAY-SCHEDULE (1,24) (60.) ..
* 437 * HEAT_72_D =DAY-SCHEDULE (1,24) (72.) ..

```

```

* 438 * PAINT_MAUD =DAY-SCHEDULE (1,7) (0.)
* 439 *                (8,17) (1.)
* 440 *                (18,24) (0.) ..
* 441 *
* 442 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 443 *
* 444 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 445 *
* 446 * HEAT_H_W =WEEK-SCHEDULE (ALL) HEAT_H_D ..
* 447 *
* 448 * HEAT_L_W =WEEK-SCHEDULE (ALL) HEAT_L_D ..
* 449 *
* 450 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 451 *
* 452 * HEAT_60_W =WEEK-SCHEDULE (ALL) HEAT_60_D ..
* 453 *
* 454 * HEAT_72_W =WEEK-SCHEDULE (ALL) HEAT_72_D ..
* 455 *
* 456 * PAINT_MAUW =WEEK-SCHEDULE (WD) PAINT_MAUD
* 457 *                (WEH) FULL_OFF_D ..
* 458 *
* 459 *
* 460 * $ FULL ON SCHEDULE
* 461 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 462 *
* 463 * $ FULL OFF SCHEDULE
* 464 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 465 *
* 466 * $ HIGH HEAT SCHEDULE
* 467 * HEAT_H_SCH =SCHEDULE THRU DEC 31 HEAT_H_W ..
* 468 *
* 469 * $ HEAT LOW SCHEDULE
* 470 * HEAT_L_SCH =SCHEDULE THRU DEC 31 HEAT_L_W ..
* 471 *
* 472 * $ HEAT 68 DEG
* 473 * HEAT_68_Y =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 474 *
* 475 * $ HEAT 60 DEG
* 476 * HEAT_60_Y =SCHEDULE THRU DEC 31 HEAT_60_W ..
* 477 *
* 478 * $ HEAT 72 DEG
* 479 * HEAT_72_Y =SCHEDULE THRU DEC 31 HEAT_72_W ..
* 480 *
* 481 * $ PAINT BOOTH MAU SCHED
* 482 * PAINT_MAU =SCHEDULE THRU DEC 31 PAINT_MAUW ..
* 483 *
* 484 *
* 485 *
* 486 *                $ ZONE DESCRIPTION
* 487 *

```

\* 488 \* ADMIN&TOOL =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 489 \* HEAT-TEMP-SCH = HEAT\_68\_Y ZONE-TYPE = CONDITIONED  
 \* 490 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 491 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 492 \* BASEBOARD-RATING = -66440. ASSIGNED-CFM = 23765.  
 \* 493 \* OUTSIDE-AIR-CFM = 4700. SIZING-OPTION = FROM-LOADS  
 \* 494 \* RATED-CFM = 23765.0 MIN-CFM-RATIO = 1.0  
 \* 495 \* EXHAUST-CFM = 4700.0 HEATING-CAPACITY = -510100.0 ..  
 \* 496 \*  
 \* 497 \* VEH\_MNT =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0  
 \* 498 \* HEAT-TEMP-SCH = HEAT\_60\_Y ZONE-TYPE = CONDITIONED  
 \* 499 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 500 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 501 \* BASEBOARD-RATING = -750000. ASSIGNED-CFM = 51300.  
 \* 502 \* OUTSIDE-AIR-CFM = 51300. SIZING-OPTION = FROM-LOADS  
 \* 503 \* RATED-CFM = 51300.0 MIN-CFM-RATIO = 1.0  
 \* 504 \* EXHAUST-CFM = 51300.0 HEATING-CAPACITY = -3698000.0 ..  
 \* 505 \*  
 \* 506 \* PAINT&CUR. =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0  
 \* 507 \* HEAT-TEMP-SCH = HEAT\_60\_Y ZONE-TYPE = CONDITIONED  
 \* 508 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 509 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 510 \* BASEBOARD-RATING = -613000. ASSIGNED-CFM = 35460.  
 \* 511 \* OUTSIDE-AIR-CFM = 35460. SIZING-OPTION = FROM-LOADS  
 \* 512 \* RATED-CFM = 35460.0 MIN-CFM-RATIO = 1.0  
 \* 513 \* HEATING-CAPACITY = -2560000.0 ..  
 \* 514 \*  
 \* 515 \* VEH\_BOD\_SH =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0  
 \* 516 \* HEAT-TEMP-SCH = HEAT\_60\_Y ZONE-TYPE = CONDITIONED  
 \* 517 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 518 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 519 \* BASEBOARD-RATING = -385000. ASSIGNED-CFM = 30360.  
 \* 520 \* OUTSIDE-AIR-CFM = 30360. SIZING-OPTION = FROM-LOADS  
 \* 521 \* RATED-CFM = 30360.0 MIN-CFM-RATIO = 1.0  
 \* 522 \* HEATING-CAPACITY = -2196000.0 ..  
 \* 523 \*  
 \* 524 \* ADMIN&ELEC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0  
 \* 525 \* HEAT-TEMP-SCH = HEAT\_68\_Y ZONE-TYPE = CONDITIONED  
 \* 526 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 527 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 528 \* BASEBOARD-RATING = -17200. ASSIGNED-CFM = 30170.  
 \* 529 \* OUTSIDE-AIR-CFM = 22290. SIZING-OPTION = FROM-LOADS  
 \* 530 \* RATED-CFM = 30170.0 MIN-CFM-RATIO = 1.0  
 \* 531 \* EXHAUST-CFM = 22290.0 HEATING-CAPACITY = -1905300.0 ..  
 \* 532 \*  
 \* 533 \* CANVAS&ARM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0  
 \* 534 \* HEAT-TEMP-SCH = HEAT\_68\_Y ZONE-TYPE = CONDITIONED  
 \* 535 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 536 \* BASEBOARD-CTRL = THERMOSTATIC  
 \* 537 \* BASEBOARD-RATING = -29400. ASSIGNED-CFM = 24090.

\* 538 \* OUTSIDE-AIR-CFM = 7970. SIZING-OPTION = FROM-LOADS  
 \* 539 \* RATED-CFM = 24090.0 MIN-CFM-RATIO = 1.0  
 \* 540 \* EXHAUST-CFM = 7970.0 HEATING-CAPACITY = -816700.0 ..  
 \* 541 \*  
 \* 542 \* PAINT&DYN =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0  
 \* 543 \* HEAT-TEMP-SCH = HEAT\_60\_Y ZONE-TYPE = CONDITIONED  
 \* 544 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 545 \* BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 5400.  
 \* 546 \* OUTSIDE-AIR-CFM = 5400. SIZING-OPTION = FROM-LOADS  
 \* 547 \* RATED-CFM = 5400.0 MIN-CFM-RATIO = 1.0  
 \* 548 \* EXHAUST-CFM = 5400.0 HEATING-CAPACITY = -498400.0 ..  
 \* 549 \*  
 \* 550 \* SHOPSUPPLY =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0  
 \* 551 \* HEAT-TEMP-SCH = HEAT\_60\_Y ZONE-TYPE = CONDITIONED  
 \* 552 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 553 \* BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 27700.  
 \* 554 \* SIZING-OPTION = FROM-LOADS RATED-CFM = 27700.0  
 \* 555 \* MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -996800.0 ..  
 \* 556 \*  
 \* 557 \* BATTERIES =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0  
 \* 558 \* HEAT-TEMP-SCH = HEAT\_60\_Y ZONE-TYPE = CONDITIONED  
 \* 559 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 560 \* BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 21000.  
 \* 561 \* OUTSIDE-AIR-CFM = 21000. SIZING-OPTION = FROM-LOADS  
 \* 562 \* RATED-CFM = 21000.0 MIN-CFM-RATIO = 1.0  
 \* 563 \* EXHAUST-CFM = 21000.0 HEATING-CAPACITY = -1645000.0 ..  
 \* 564 \*  
 \* 565 \* PAINT\_BTHS =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 85.0  
 \* 566 \* HEAT-TEMP-SCH = HEAT\_72\_Y ZONE-TYPE = CONDITIONED  
 \* 567 \* THERMOSTAT-TYPE = PROPORTIONAL  
 \* 568 \* BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 49700.  
 \* 569 \* OUTSIDE-AIR-CFM = 49700. SIZING-OPTION = FROM-LOADS  
 \* 570 \* RATED-CFM = 49700.0 MIN-CFM-RATIO = 1.0  
 \* 571 \* EXHAUST-CFM = 49700.0 HEATING-CAPACITY = -4255000.0 ..  
 \* 572 \*  
 \* 573 \*  
 \* 574 \* \$ SYSTEM DESCRIPTION  
 \* 575 \*  
 \* 576 \* HV\_1 =SYSTEM SYSTEM-TYPE = HVSYS  
 \* 577 \* MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL\_ON  
 \* 578 \* MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 579 \* ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 580 \* SUPPLY-CFM = 23765. RETURN-CFM = 19012.  
 \* 581 \* RATED-CFM = 23765. MIN-OUTSIDE-AIR = 0.2  
 \* 582 \* SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 583 \* MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 584 \* NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 585 \* HEATING-CAPACITY = -510100. FURNACE-AUX = 0.  
 \* 586 \* ZONE-NAMES = (ADMIN&TOOL) ..  
 \* 587 \*

```

* 588 * HV_2   =SYSTEM  SYSTEM-TYPE = HVSYS
* 589 *         MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 590 *         MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 591 *         ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 592 *         SUPPLY-CFM = 30170. RETURN-CFM = 7844.
* 593 *         RATED-CFM = 30170. MIN-OUTSIDE-AIR = 0.74
* 594 *         SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 595 *         MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 596 *         NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 597 *         HEATING-CAPACITY = -1905300. FURNACE-AUX = 0.
* 598 *         ZONE-NAMES = (ADMIN&ELEC) ..
* 599 *
* 600 * HV_3   =SYSTEM  SYSTEM-TYPE = HVSYS
* 601 *         MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 602 *         MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 603 *         ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 604 *         SUPPLY-CFM = 24090. RETURN-CFM = 16120.
* 605 *         RATED-CFM = 24090. MIN-OUTSIDE-AIR = 0.33
* 606 *         SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 607 *         MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 608 *         NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 609 *         HEATING-CAPACITY = -855600. FURNACE-AUX = 0.
* 610 *         ZONE-NAMES = (CANVAS&ARM) ..
* 611 *
* 612 * MAU_5   =SYSTEM  SYSTEM-TYPE = HVSYS
* 613 *         MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 614 *         MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 615 *         ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 616 *         SUPPLY-CFM = 5400. RATED-CFM = 5400.
* 617 *         MIN-OUTSIDE-AIR = 1.0 SUPPLY-DELTA-T = 2.4
* 618 *         SUPPLY-KW = 0.00078
* 619 *         MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 620 *         NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
* 621 *         HEATING-CAPACITY = -498400. FURNACE-AUX = 0.
* 622 *         ZONE-NAMES = (PAINT&DYN) ..
* 623 *
* 624 * SUPPLY_UH =SYSTEM  SYSTEM-TYPE = UHT
* 625 *         MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 626 *         RATED-CFM = 27700. SUPPLY-DELTA-T = 0.18
* 627 *         SUPPLY-KW = 0.000059
* 628 *         NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 629 *         HEATING-CAPACITY = -996800. FURNACE-AUX = 0.
* 630 *         ZONE-NAMES = (SHOPSUPPLY) ..
* 631 *
* 632 * MAU_6&7 =SYSTEM  SYSTEM-TYPE = HVSYS
* 633 *         MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 634 *         MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 635 *         ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 636 *         SUPPLY-CFM = 42220. RATED-CFM = 42220.
* 637 *         MIN-OUTSIDE-AIR = 1.0 SUPPLY-DELTA-T = 2.4

```

\* 638 \*            SUPPLY-KW = 0.00078  
 \* 639 \*            MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 640 \*            NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 641 \*            HEATING-CAPACITY = -1645000. FURNACE-AUX = 0.  
 \* 642 \*            ZONE-NAMES = (BATTERIES) ..  
 \* 643 \*  
 \* 644 \* MAU\_1&2A =SYSTEM    SYSTEM-TYPE = HVSYS  
 \* 645 \*            MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL\_ON  
 \* 646 \*            MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 647 \*            ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 648 \*            SUPPLY-CFM = 51300. RATED-CFM = 51300.  
 \* 649 \*            MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.2  
 \* 650 \*            SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 651 \*            MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 652 \*            NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 653 \*            HEATING-CAPACITY = -3698000. FURNACE-AUX = 0.  
 \* 654 \*            ZONE-NAMES = (VEH\_MNT) ..  
 \* 655 \*  
 \* 656 \* MAU\_1&2B =SYSTEM    SYSTEM-TYPE = HVSYS  
 \* 657 \*            MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL\_ON  
 \* 658 \*            MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 659 \*            ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 660 \*            SUPPLY-CFM = 35460. RATED-CFM = 35460.  
 \* 661 \*            MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.2  
 \* 662 \*            SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 663 \*            MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 664 \*            NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 665 \*            HEATING-CAPACITY = -2560000. FURNACE-AUX = 0.  
 \* 666 \*            ZONE-NAMES = (PAINT&CUR.) ..  
 \* 667 \*  
 \* 668 \* MAU\_3    =SYSTEM    SYSTEM-TYPE = HVSYS  
 \* 669 \*            MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL\_ON  
 \* 670 \*            MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 671 \*            ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 672 \*            SUPPLY-CFM = 30360. RATED-CFM = 30360.  
 \* 673 \*            MIN-OUTSIDE-AIR = 1.0 SUPPLY-DELTA-T = 2.4  
 \* 674 \*            SUPPLY-KW = 0.00078  
 \* 675 \*            MOTOR-PLACEMENT = OUTSIDE-AIRFLOW  
 \* 676 \*            NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 677 \*            HEATING-CAPACITY = -2196000. FURNACE-AUX = 0.  
 \* 678 \*            ZONE-NAMES = (VEH\_BOD\_SH) ..  
 \* 679 \*  
 \* 680 \* MAU\_4\_8\_&9 =SYSTEM    SYSTEM-TYPE = HVSYS  
 \* 681 \*            MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = PAINT\_MAU  
 \* 682 \*            MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0  
 \* 683 \*            ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST  
 \* 684 \*            SUPPLY-CFM = 49700. RATED-CFM = 49700.  
 \* 685 \*            MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = PAINT\_MAU  
 \* 686 \*            SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078  
 \* 687 \*            MOTOR-PLACEMENT = OUTSIDE-AIRFLOW

\* 688 \* NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0  
 \* 689 \* HEATING-CAPACITY = -4245000. FURNACE-AUX = 0.  
 \* 690 \* ZONE-NAMES = (PAINT\_BTHS) ..  
 \* 691 \*  
 \* 692 \* END ..  
 \* 693 \* COMPUTE SYSTEMS ..  
 \* 694 \*  
 \* 695 \* INPUT PLANT ..

# PDL PROCESSOR INPUT DATA

3/18/1995 16:52:17 PDL RUN 1

\* 696 \*  
 \* 697 \*  
 \* 698 \* \$-----\$  
 \* 699 \* \$EZ-DOE PLANTS INPUT\$  
 \* 700 \* \$-----\$  
 \* 701 \*  
 \* 702 \* \$ GENERAL PROJECT DATA  
 \* 703 \*  
 \* 704 \* TITLE LINE-1 \* EMC ENGINEERS INC. \*  
 \* 705 \* LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 \* 706 \* LINE-3 \* DENVER, CO 80227 \*  
 \* 707 \*  
 \* 708 \* LINE-4 \*BUILDING 4530, SMA BUILDING \*  
 \* 709 \* LINE-5 \*BASE MODEL \*..  
 \* 710 \*  
 \* 711 \* ABORT ERRORS ..  
 \* 712 \* DIAGNOSTIC WARNINGS ..  
 \* 713 \* PLANT-REPORT SUMMARY=(PS-A,PS-B,BEPS)  
 \* 714 \*  
 \* 715 \* HOURLY-DATA-SAVE = YES ..  
 \* 716 \*  
 \* 717 \* \$ SCHEDULES  
 \* 718 \*  
 \* 719 \* FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
 \* 720 \*  
 \* 721 \*  
 \* 722 \* FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 \* 723 \*  
 \* 724 \*  
 \* 725 \* \$ FULL ON SCHEDULE  
 \* 726 \* FULL\_ON\_SC =SCHEDULE THRU DEC 31 FULL\_ON\_W ..  
 \* 727 \*  
 \* 728 \*  
 \* 729 \*

\* 730 \*           \$ EQUIPMENT DESCRIPTION  
\* 731 \*  
\* 732 \* HTP\_1   =PLANT-EQUIPMENT TYPE = HTANK-STORAGE  
\* 733 \*           SIZE = 22.4 ..  
\* 734 \*  
\* 735 \* PLANT-PARAMETERS   CCIRC-HEAD = 63.2 HCIRC-HEAD = 100.0  
\* 736 \*           HCIRC-DESIGN-T-DROP = 20.0 ..  
\* 737 \*  
\* 738 \*  
\* 739 \* ENERGY-RESOURCE   RESOURCE = ELECTRICITY ..  
\* 740 \* ENERGY-RESOURCE   RESOURCE = STEAM ..  
\* 741 \*  
\* 742 \* ENERGY-STORAGE   HEAT-STORE-RATE = 22.4 HEAT-SUPPLY-RATE = 22.4  
\* 743 \*           HTANK-BASE-T = 195.0 HTANK-T-RANGE = 5.0  
\* 744 \*           HEAT-STORE-SCH = FULL\_ON\_SC ..  
\* 745 \*  
\* 746 \*   HEAT-RECOVERY  
\* 747 \*       SUPPLY-1 = (HTANK-STORAGE)  
\* 748 \*       DEMAND-1 = (SPACE-HEAT,PROCESS-HEAT) ..  
\* 749 \*  
\* 750 \*  
\* 751 \*  
\* 752 \* END ..  
\* 753 \* COMPUTE PLANT ..  
\* 754 \* STOP ..



ENERGY TYPE IN SITE MBTU-	STEAM	ELECTRICITY	RECOVERED
CATEGORY OF USE			
SPACE HEAT	61691.20	0.00	0.00
SPACE COOL	0.00	0.00	0.00
HVAC AUX	0.00	8065.36	0.00
DOM HOT WTR	207.01	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	0.00	893.59	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	0.00	0.00	0.00
	-----	-----	-----
TOTAL	61898.21	8958.96	0.00

TOTAL SITE ENERGY 70857.42 MBTU 434.0 KBTU/SQFT-YR GROSS-AREA 434.0 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 130068.23 MBTU 796.7 KBTU/SQFT-YR GROSS-AREA 796.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 4.2  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY- STEAM	ELECTRICITY
JAN	TOTAL(MBTU) 11502.539	758.693
	PEAK(KBTU) 25323.368	1253.22
	DY/HR 26/ 8	5/13
FEB	TOTAL(MBTU) 8956.939	687.959
	PEAK(KBTU) 21237.568	1251.5
	DY/HR 4/10	4/10
MAR	TOTAL(MBTU) 8865.385	764.398
	PEAK(KBTU) 21426.776	1250.548
	DY/HR 9/ 8	3/10
APR	TOTAL(MBTU) 4760.452	735.109
	PEAK(KBTU) 14520.016	1249.223
	DY/HR 1/ 8	19/14
MAY	TOTAL(MBTU) 2784.868	760.305
	PEAK(KBTU) 12082.52	1248.948
	DY/HR 16/ 8	3/10
JUN	TOTAL(MBTU) 1174.324	737.896
	PEAK(KBTU) 6163.782	1247.652
	DY/HR 8/ 5	30/14
JUL	TOTAL(MBTU) 1207.404	756.858
	PEAK(KBTU) 5214.752	1247.652
	DY/HR 25/ 5	29/14
AUG	TOTAL(MBTU) 1194.955	763.359
	PEAK(KBTU) 5436.226	1247.652
	DY/HR 22/ 5	31/14
SEP	TOTAL(MBTU) 2015.566	737.965
	PEAK(KBTU) 9023.556	1248.416
	DY/HR 24/ 4	14/10
OCT	TOTAL(MBTU) 3667.707	757.13
	PEAK(KBTU) 14408.24	1249.046
	DY/HR 28/ 8	26/11
NOV	TOTAL(MBTU) 6356.56	738.469
	PEAK(KBTU) 16516.016	1249.581
	DY/HR 29/ 8	21/14

DEC	TOTAL(MBTU)	9411.517	761.07
	PEAK(KBTU)	21749.744	1250.888
	DY/HR	28/ 8	20/10
	ONE YEAR	61898.211	8959.213
	USE/PEAK	25323.368	1253.22

**COMPUTER SIMULATIONS**  
**BUILDING 4530**

**RUN 1 - SCHEDULE START/STOP AND NIGHT SETBACK**

LDL PROCESSOR INPUT DATA

4/18/1995 11:26:57 LDL RUN 1

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* 3 *
* 4 *
* 5 *
* 6 *          $-----$
* 7 *          $ E Z - D O E   L O A D S   I N P U T $
* 8 *          $-----$
* 9 *
*10 *          $ GENERAL PROJECT DATA
*11 * TITLE  LINE-1 *      EMC      ENGINEERS      INC.  *
*12 *          LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
*13 *          LINE-3 *      DENVER,      CO      80227  *
*14 *
*15 *          LINE-4 *BUILDING 4530, SMA BUILDING      *
*16 *          LINE-5 *MODEL WITH SET BACK              * ..
*17 *
*18 * ABORT      ERRORS ..
*19 * DIAGNOSTIC  WARNINGS ..
*20 * LOADS-REPORT SUMMARY=(LS-C,LS-D)
*21 *          HOURLY-DATA-SAVE = YES ..
*22 * BUILDING-LOCATION HOLIDAY = NO
*23 *          X-REF = 0.0 ..
*24 *          Y-REF = 0.0 ..
*25 * RUN-PERIOD   JAN 1 1994 THRU DEC 31 1994 ..
*26 *
*27 *
*28 *          $ SCHEDULES
*29 *
*30 * FULL_ON_D  =DAY-SCHEDULE (1,24) (1.) ..
*31 *
*32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
*33 *
*34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
*35 *          (6,7) (0.35)
*36 *          (8,9) (0.5,0.6)
*37 *          (10,11) (0.75)
*38 *          (12) (0.5)
*39 *          (13,14) (0.75)
*40 *          (15) (0.5)
*41 *          (16,18) (0.4)
*42 *          (19) (0.3)
*43 *          (20,24) (0.23) ..
*44 *
*45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
*46 *          (7,19) (0.07)
*47 *          (20,24) (0.23) ..
*48 *
*49 * PEOPLE_D   =DAY-SCHEDULE (1,5) (0.)
*50 *          (6,7) (0.1,0.5)
*51 *          (8,11) (1.)
*52 *          (12) (0.8)
*53 *          (13,16) (1.)
*54 *          (17,18) (0.5,0.1)
*55 *          (19,24) (0.) ..
*56 *
*57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
*58 *          (6,7) (0.1,0.2)
*59 *          (8,9) (0.3)
*60 *          (10,11) (0.4,0.7)
*61 *          (12,13) (0.4)
*62 *          (14,15) (0.8)
*63 *          (16,18) (0.7,0.3,0.1)
*64 *          (19,24) (0.05) ..
*65 *
*66 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
*67 *          (8) (1.)
*68 *          (9,16) (0.1)
*69 *          (17) (1.)
*70 *          (18,24) (0.1) ..
*71 *
*72 *
*73 * FULL_ON_W  =WEEK-SCHEDULE (ALL) FULL_ON_D ..
*74 *
*75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
*76 *
*77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
*78 *          (WEH) LT_ON_WKND ..
*79 *
*80 * PEOPLE_W   =WEEK-SCHEDULE (WD) PEOPLE_D
*81 *          (WEH) FULL_OFF_D ..
*82 *
*83 * EQUIP_W     =WEEK-SCHEDULE (WD) EQUIP_ON_D
*84 *          (WEH) FULL_OFF_D ..
*85 *
*86 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
*87 *          (WEH) FULL_OFF_D ..
*88 *
*89 *
*90 * $ FULL ON SCHEDULE
*91 * FULL_ON   =SCHEDULE THRU DEC 31 FULL_ON_W ..
*92 *
*93 * $ FULL OFF SCHEDULE
*94 * FULL_OFF  =SCHEDULE THRU DEC 31 FULL_OFF_W ..
*95 *
*96 * $ LIGHTING SCHEDULE
*97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
*98 *
*99 * $ OCCUPANCY SCHEDULE
*100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
*101 *
*102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ SHOP INFILTRATION SCHED
* 106 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 107 *
* 108 *
* 109 *
* 110 *           $ CONSTRUCTION TYPES
* 111 *
* 112 *
* 113 *
* 114 * FLOORCON =CONSTRUCTION    U-VALUE = 0.010 ..
* 115 *
* 116 *   $ ROOF CONSTRUCTION
* 117 * ROOFCON =CONSTRUCTION      U-VALUE = 0.030 ..
* 118 *
* 119 *   $ WALL CONSTRUCTION
* 120 * WALL_CON =CONSTRUCTION      U-VALUE = 0.010 ..
* 121 * LDOORCON =CONSTRUCTION      U-VALUE = 0.400 ..
* 122 * SDOORCON =CONSTRUCTION      U-VALUE = 1.000 ..
* 123 *
* 124 * G_TYPE1 =GLASS-TYPE        SHADING-COEF = 1.000
* 125 *                               PANES = 1
* 126 *                               GLASS-CONDUCTANCE = 1.130 ..
* 127 *
* 128 *
* 129 *
* 130 *
* 131 *           $ SPACE DESCRIPTION
* 132 *
* 133 * ADMIN&TOOL =SPACE          AREA = 14228.0  VOLUME = 128052.0
* 134 *                               TEMPERATURE = (68.)  ZONE-TYPE = CONDITIONED
* 135 *                               PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 136 *                               PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 137 *                               PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 138 *                               LIGHTING-KW = 22.9  LIGHTING-SCHEDULE = LIGHT_SCHD
* 139 *                               SOURCE-SCHEDULE = FULL_ON  SOURCE-TYPE = HOT-WATER
* 140 *                               SOURCE-BTU/HR = 23630.0  SOURCE-SENSIBLE = 0.0
* 141 *                               INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 142 *                               INF-SCHEDULE = FULL_ON ..
* 143 *
* 144 * U-W          HEIGHT = 110.0  WIDTH = 129.5  CONS = FLOORCON ..
* 145 *
* 146 * ROOF          HEIGHT = 110.0  WIDTH = 129.5  CONS = ROOFCON
* 147 *                               TILT = 0 ..
* 148 *
* 149 * E-W          HEIGHT = 9.0  WIDTH = 129.5  CONS = WALL_CON
* 150 *                               AZIMUTH = 0 ..
* 151 *
* 152 * WINDOW HEIGHT = 4.0  WIDTH = 2.0  G-T = G_TYPE1
* 153 *                               MULTIPLIER = 13.0 ..
* 154 *
* 155 * DOOR          HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 156 *                               MULTIPLIER = 3.0 ..
* 157 *
* 158 * E-W          HEIGHT = 9.0  WIDTH = 86.0  CONS = WALL_CON
* 159 *                               AZIMUTH = 0 ..
* 160 *
* 161 * WINDOW HEIGHT = 4.0  WIDTH = 4.0  G-T = G_TYPE1
* 162 *                               MULTIPLIER = 12.0 ..
* 163 *
* 164 * DOOR          HEIGHT = 7.5  WIDTH = 2.0  CONS = SDOORCON
* 165 *                               MULTIPLIER = 2.0 ..
* 166 *
* 167 *
* 168 * VEH_MNT      =SPACE          AREA = 33660.0  VOLUME = 1000000.0
* 169 *                               TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 170 *                               PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 50.0
* 171 *                               PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 172 *                               PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = INCAND
* 173 *                               LIGHTING-KW = 14.15  LIGHTING-SCHEDULE = LIGHT_SCHD
* 174 *                               INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 1.0
* 175 *                               INF-SCHEDULE = FULL_ON ..
* 176 *
* 177 * U-W          HEIGHT = 165.0  WIDTH = 204.0  CONS = FLOORCON ..
* 178 *
* 179 * ROOF          HEIGHT = 165.0  WIDTH = 204.0  CONS = ROOFCON
* 180 *                               TILT = 0 ..
* 181 *
* 182 * E-W          HEIGHT = 32.5  WIDTH = 204.0  CONS = WALL_CON
* 183 *                               AZIMUTH = 0 ..
* 184 *
* 185 * DOOR          HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 186 *                               MULTIPLIER = 6.0 ..
* 187 *
* 188 * DOOR          HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 189 *                               MULTIPLIER = 3.0 ..
* 190 *
* 191 * E-W          HEIGHT = 32.5  WIDTH = 204.0  CONS = WALL_CON
* 192 *                               AZIMUTH = 180 ..
* 193 *
* 194 * DOOR          HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 195 *                               MULTIPLIER = 6.0 ..
* 196 *
* 197 * DOOR          HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 198 *                               MULTIPLIER = 3.0 ..
* 199 *
* 200 *
* 201 * PAINT&CUR. =SPACE          AREA = 29040.0  VOLUME = 943800.0
* 202 *                               TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 203 *                               PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 204 *                               PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 205 *                               PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = INCAND
* 206 *                               LIGHTING-KW = 8.1  LIGHTING-SCHEDULE = LIGHT_SCHD
* 207 *                               INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.96
* 208 *                               INF-SCHEDULE = FULL_ON ..
* 209 *
* 210 * U-W          HEIGHT = 165.0  WIDTH = 176.0  CONS = FLOORCON ..

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* 211 *
* 212 *      ROOF      HEIGHT = 165.0  WIDTH = 176.0  CONS = ROOFCON
* 213 *      TILT = 0      ..
* 214 *
* 215 *      E-W      HEIGHT = 32.5  WIDTH = 176.0  CONS = WALL_CON
* 216 *      AZIMUTH = 0      ..
* 217 *
* 218 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 219 *      MULTIPLIER = 5.0      ..
* 220 *
* 221 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 222 *      MULTIPLIER = 2.0      ..
* 223 *
* 224 *      E-W      HEIGHT = 32.5  WIDTH = 176.0  CONS = WALL_CON
* 225 *      AZIMUTH = 180      ..
* 226 *
* 227 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 228 *      MULTIPLIER = 5.0      ..
* 229 *
* 230 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 231 *      MULTIPLIER = 2.0      ..
* 232 *
* 233 *      E-W      HEIGHT = 32.5  WIDTH = 165.0  CONS = WALL_CON
* 234 *      AZIMUTH = 270      ..
* 235 *
* 236 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 237 *      MULTIPLIER = 3.0      ..
* 238 *
* 239 *
* 240 *      VEH_BOD_SH =SPACE      AREA = 14628.0  VOLUME = 475410.0
* 241 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 242 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 243 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 244 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = INCAND
* 245 *      LIGHTING-KW = 6.8  LIGHTING-SCHEDULE = LIGHT_SCHD
* 246 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.43
* 247 *      INF-SCHEDULE = FULL_ON      ..
* 248 *
* 249 *      U-W      HEIGHT = 69.0  WIDTH = 212.0  CONS = FLOORCON ..
* 250 *
* 251 *      ROOF      HEIGHT = 69.0  WIDTH = 212.0  CONS = ROOFCON
* 252 *      TILT = 0      ..
* 253 *
* 254 *      E-W      HEIGHT = 32.5  WIDTH = 212.0  CONS = WALL_CON
* 255 *      AZIMUTH = 0      ..
* 256 *
* 257 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 258 *      MULTIPLIER = 4.0      ..
* 259 *
* 260 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 261 *      MULTIPLIER = 2.0      ..
* 262 *
* 263 *      E-W      HEIGHT = 32.5  WIDTH = 212.0  CONS = WALL_CON
* 264 *      AZIMUTH = 180      ..
* 265 *
* 266 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 267 *      MULTIPLIER = 5.0      ..
* 268 *
* 269 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 270 *      MULTIPLIER = 3.0      ..
* 271 *
* 272 *      E-W      HEIGHT = 32.5  WIDTH = 69.0  CONS = WALL_CON
* 273 *      AZIMUTH = 270      ..
* 274 *
* 275 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 276 *      MULTIPLIER = 2.0      ..
* 277 *
* 278 *
* 279 *      ADMIN&ELEC =SPACE      AREA = 10085.0  VOLUME = 90765.0
* 280 *      TEMPERATURE = (68.)  ZONE-TYPE = CONDITIONED
* 281 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 282 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 283 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 284 *      LIGHTING-KW = 9.79  LIGHTING-SCHEDULE = LIGHT_SCHD
* 285 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 286 *      INF-SCHEDULE = FULL_ON      ..
* 287 *
* 288 *      U-W      HEIGHT = 83.0  WIDTH = 129.5  CONS = FLOORCON ..
* 289 *
* 290 *      ROOF      HEIGHT = 83.0  WIDTH = 129.5  CONS = ROOFCON
* 291 *      TILT = 0      ..
* 292 *
* 293 *      E-W      HEIGHT = 9.0  WIDTH = 125.0  CONS = WALL_CON
* 294 *      AZIMUTH = 270      ..
* 295 *
* 296 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 297 *      MULTIPLIER = 3.0      ..
* 298 *
* 299 *      DOOR      HEIGHT = 14.0  WIDTH = 14.5  CONS = LDOORCON ..
* 300 *
* 301 *      DOOR      HEIGHT = 9.0  WIDTH = 14.5  CONS = LDOORCON
* 302 *      MULTIPLIER = 3.0      ..
* 303 *
* 304 *
* 305 *      CANVAS&ARM =SPACE      AREA = 21746.0  VOLUME = 130020.0
* 306 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 307 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 308 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 309 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 310 *      LIGHTING-KW = 13.67  LIGHTING-SCHEDULE = LIGHT_SCHD
* 311 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 312 *      INF-SCHEDULE = FULL_ON      ..
* 313 *
* 314 *      U-W      HEIGHT = 84.0  WIDTH = 259.0  CONS = FLOORCON ..
* 315 *
* 316 *      ROOF      HEIGHT = 84.0  WIDTH = 259.0  CONS = ROOFCON
* 317 *      TILT = 0      ..
* 318 *

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* 319 *      E-W      HEIGHT = 9.0  WIDTH = 129.5  CONS = WALL_CON
* 320 *      AZIMUTH = 180  ..
* 321 *
* 322 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 323 *      MULTIPLIER = 3.0  ..
* 324 *
* 325 *      E-W      HEIGHT = 25.0  WIDTH = 120.0  CONS = WALL_CON
* 326 *      AZIMUTH = 90  ..
* 327 *
* 328 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 329 *      MULTIPLIER = 3.0  ..
* 330 *
* 331 *
* 332 * PAINT&DYN =SPACE  AREA = 1775.0  VOLUME = 15975.0
* 333 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 334 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 15.0
* 335 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 336 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 337 *      LIGHTING-KW = 0.45  LIGHTING-SCHEDULE = LIGHT_SCHD
* 338 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 339 *      INF-SCHEDULE = FULL_ON  ..
* 340 *
* 341 *      U-W      HEIGHT = 22.0  WIDTH = 129.5  CONS = FLOORCON ..
* 342 *
* 343 *      ROOF      HEIGHT = 22.0  WIDTH = 129.5  CONS = ROOFCON
* 344 *      TILT = 0  ..
* 345 *
* 346 *
* 347 * SHOPSUPPLY =SPACE  AREA = 29641.0  VOLUME = 741025.0
* 348 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 349 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 350 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 351 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 352 *      LIGHTING-KW = 4.7  LIGHTING-SCHEDULE = LIGHT_SCHD
* 353 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 354 *      INF-SCHEDULE = FULL_ON  ..
* 355 *
* 356 *      U-W      HEIGHT = 228.9  WIDTH = 129.5  CONS = FLOORCON ..
* 357 *
* 358 *      ROOF      HEIGHT = 228.5  WIDTH = 129.5  CONS = ROOFCON
* 359 *      TILT = 0  ..
* 360 *
* 361 *      E-W      HEIGHT = 25.0  WIDTH = 211.0  CONS = WALL_CON
* 362 *      AZIMUTH = 0  ..
* 363 *
* 364 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 365 *      MULTIPLIER = 2.0  ..
* 366 *
* 367 *      DOOR      HEIGHT = 8.0  WIDTH = 8.0  CONS = LDOORCON
* 368 *      MULTIPLIER = 2.0  ..
* 369 *
* 370 *
* 371 * BATTERIES =SPACE  AREA = 4705.0  VOLUME = 84690.0
* 372 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 373 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 374 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 375 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 376 *      LIGHTING-KW = 11.08  LIGHTING-SCHEDULE = LIGHT_SCHD
* 377 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 378 *      INF-SCHEDULE = FULL_ON  ..
* 379 *
* 380 *      U-W      HEIGHT = 39.2  WIDTH = 120.0  CONS = FLOORCON ..
* 381 *
* 382 *      ROOF      HEIGHT = 39.2  WIDTH = 120.0  CONS = ROOFCON
* 383 *      TILT = 0  ..
* 384 *
* 385 *      E-W      HEIGHT = 18.0  WIDTH = 120.0  CONS = WALL_CON
* 386 *      AZIMUTH = 180  ..
* 387 *
* 388 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 389 *      MULTIPLIER = 2.0  ..
* 390 *
* 391 *
* 392 * PAINT_BTHS =SPACE  AREA = 3742.0  VOLUME = 44688.0
* 393 *      TEMPERATURE = (72.)  ZONE-TYPE = CONDITIONED
* 394 *      AREA/PERSON = 100.0  INF-METHOD = NONE  ..
* 395 *
* 396 *      U-W      HEIGHT = 61.2  WIDTH = 61.2  CONS = FLOORCON ..
* 397 *
* 398 *      ROOF      HEIGHT = 61.2  WIDTH = 61.2  CONS = ROOFCON
* 399 *      TILT = 0  ..
* 400 *
* 401 *
* 402 * END  ..
* 403 * COMPUTE LOADS  ..
* 404 *
* 405 * INPUT SYSTEMS  ..

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SDL PROCESSOR INPUT DATA

4/18/1995 11:26:57 SDL RUN 1

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* 406 *
* 407 *
* 408 *
* 409 *      $-----$
* 410 *      $EZ - DOE SYSTEMS INPUT $
* 411 *      $-----$
* 412 *
* 413 *      $ GENERAL PROJECT DATA
* 414 *
* 415 *      TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 416 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 417 *      LINE-3 *      DENVER,      CO      80227      *
* 418 *
* 419 *      LINE-4 *BUILDING 4530, SMA BUILDING      *
* 420 *      LINE-5 *MODEL WITH SET BACK      * ..
* 421 *      ABORT      ERRORS ..
* 422 *      DIAGNOSTIC      WARNINGS ..
* 423 *      SYSTEMS-REPORT      SUMMARY=(SS-A,SS-B,SS-C,SS-H)
* 424 *      HOURLY-DATA-SAVE = YES ..
* 425 *
* 426 *      $ SCHEDULES
* 427 *      FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 428 *      FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 429 *      HEAT_H_D =DAY-SCHEDULE (1,6) (55.)
* 430 *      (7,17) (74.)
* 431 *      (18,24) (55.) ..
* 432 *      HEAT_L_D =DAY-SCHEDULE (1,6) (47.)
* 433 *      (7,17) (60.)
* 434 *      (18,24) (47.) ..
* 435 *      HEAT_68_D =DAY-SCHEDULE (1,24) (74.) ..
* 436 *      HEAT_60_D =DAY-SCHEDULE (1,24) (60.) ..
* 437 *      HEAT_72_D =DAY-SCHEDULE (1,24) (72.) ..
* 438 *      PAINT_MAUD =DAY-SCHEDULE (1,7) (0.)
* 439 *      (8,17) (1.)
* 440 *      (18,24) (0.) ..
* 441 *      FAN_WSB_D =DAY-SCHEDULE (1,5) (0.)
* 442 *      (6,15) (1.)
* 443 *      (16,24) (0.) ..
* 444 *      HT60_WSB_D =DAY-SCHEDULE (1,5) (47.)
* 445 *      (6,15) (60.)
* 446 *      (16,24) (47.) ..
* 447 *      HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 448 *      HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
* 449 *      (6,15) (74.)
* 450 *      (16,24) (50.) ..
* 451 *      HV2_SB_D =DAY-SCHEDULE (1,5) (65.)
* 452 *      (6,15) (74.)
* 453 *      (16,24) (65.) ..
* 454 *      HEAT_47_D =DAY-SCHEDULE (1,24) (47.) ..
* 455 *
* 456 *      FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 457 *
* 458 *      FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 459 *
* 460 *      HEAT_H_W =WEEK-SCHEDULE (ALL) HEAT_H_D ..
* 461 *
* 462 *      HEAT_L_W =WEEK-SCHEDULE (ALL) HEAT_L_D ..
* 463 *
* 464 *      HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 465 *
* 466 *      HEAT_60_W =WEEK-SCHEDULE (ALL) HEAT_60_D ..
* 467 *
* 468 *      HEAT_72_W =WEEK-SCHEDULE (ALL) HEAT_72_D ..
* 469 *
* 470 *      PAINT_MAUW =WEEK-SCHEDULE (ALL) PAINT_MAUD ..
* 471 *
* 472 *      FAN_WSB_W =WEEK-SCHEDULE (ALL) FAN_WSB_D ..
* 473 *
* 474 *      HT60_WSB_W =WEEK-SCHEDULE (ALL) HT60_WSB_D ..
* 475 *
* 476 *      HT68_WSB_W =WEEK-SCHEDULE (ALL) HT68_WSB_D ..
* 477 *
* 478 *      HV2_HTSB_W =WEEK-SCHEDULE (ALL) HV2_SB_D ..
* 479 *
* 480 *
* 481 *      $ FULL ON SCHEDULE
* 482 *      FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 483 *
* 484 *      $ FULL OFF SCHEDULE
* 485 *      FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 486 *
* 487 *      $ HIGH HEAT SCHEDULE
* 488 *      HEAT_H_SCH =SCHEDULE THRU DEC 31 HEAT_H_W ..
* 489 *
* 490 *      $ HEAT LOW SCHEDULE
* 491 *      HEAT_L_SCH =SCHEDULE THRU DEC 31 HEAT_L_W ..
* 492 *
* 493 *      $ HEAT 68 DEG
* 494 *      HEAT_68_Y =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 495 *
* 496 *      $ HEAT 60 DEG
* 497 *      HEAT_60_Y =SCHEDULE THRU DEC 31 HEAT_60_W ..
* 498 *
* 499 *      $ HEAT 72 DEG
* 500 *      HEAT_72_Y =SCHEDULE THRU DEC 31 HEAT_72_W ..
* 501 *
* 502 *      $ PAINT BOOTH MAU SCHED
* 503 *      PAINT_MAU =SCHEDULE THRU DEC 31 PAINT_MAUW ..
* 504 *
* 505 *      $ FAN SCHD WITH SET BACK

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* 506 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 507 *
* 508 * $ HEAT 60F W SET BACK
* 509 * HT60_W_SB =SCHEDULE THRU DEC 31 HT60_WSB_W ..
* 510 *
* 511 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 512 *
* 513 * $ HV2 SETBACK SCHED
* 514 * HV2_HT_SB =SCHEDULE THRU DEC 31 HV2_HTSB_W ..
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$ ZONE DESCRIPTION

ADMIN&TOOL =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
BASEBOARD-RATING = -66440. ASSIGNED-CFM = 23765.
OUTSIDE-AIR-CFM = 4700. SIZING-OPTION = FROM-LOADS
RATED-CFM = 23765.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 4700.0 HEATING-CAPACITY = -510100.0 ..

VEH_MNT =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
BASEBOARD-RATING = -750000. ASSIGNED-CFM = 51300.
OUTSIDE-AIR-CFM = 51300. SIZING-OPTION = FROM-LOADS
RATED-CFM = 51300.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 51300.0 HEATING-CAPACITY = -3698000.0 ..

PAINT&CUR. =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
BASEBOARD-RATING = -613000. ASSIGNED-CFM = 35460.
OUTSIDE-AIR-CFM = 35460. SIZING-OPTION = FROM-LOADS
RATED-CFM = 35460.0 MIN-CFM-RATIO = 1.0
HEATING-CAPACITY = -2560000.0 ..

VEH_BOD_SH =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
BASEBOARD-RATING = -385000. ASSIGNED-CFM = 30360.
OUTSIDE-AIR-CFM = 30360. SIZING-OPTION = FROM-LOADS
RATED-CFM = 30360.0 MIN-CFM-RATIO = 1.0
HEATING-CAPACITY = -2196000.0 ..

ADMIN&ELEC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
HEAT-TEMP-SCH = HV2_HT_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
BASEBOARD-RATING = -17200. ASSIGNED-CFM = 30170.
OUTSIDE-AIR-CFM = 22290. SIZING-OPTION = FROM-LOADS
RATED-CFM = 30170.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 22290.0 HEATING-CAPACITY = -1905300.0 ..

CANVAS&ARM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
BASEBOARD-RATING = -29400. ASSIGNED-CFM = 24090.
OUTSIDE-AIR-CFM = 7970. SIZING-OPTION = FROM-LOADS
RATED-CFM = 24090.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 7970.0 HEATING-CAPACITY = -816700.0 ..

PAINT&DYN =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 5400.
OUTSIDE-AIR-CFM = 5400. SIZING-OPTION = FROM-LOADS
RATED-CFM = 5400.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 5400.0 HEATING-CAPACITY = -498400.0 ..

SHOPSUPPLY =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 27700.
SIZING-OPTION = FROM-LOADS RATED-CFM = 27700.0
MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -996800.0 ..

BATTERIES =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 21000.
OUTSIDE-AIR-CFM = 21000. SIZING-OPTION = FROM-LOADS
RATED-CFM = 21000.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 21000.0 HEATING-CAPACITY = -1645000.0 ..

PAINT_BTHS =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 85.0
HEAT-TEMP-SCH = HEAT 72_Y ZONE-TYPE = CONDITIONED
THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 49700.
OUTSIDE-AIR-CFM = 49700. SIZING-OPTION = FROM-LOADS
RATED-CFM = 49700.0 MIN-CFM-RATIO = 1.0
EXHAUST-CFM = 49700.0 HEATING-CAPACITY = -4255000.0 ..

$ SYSTEM DESCRIPTION

HV_1 =SYSTEM SYSTEM-TYPE = HVSYS HEATING-SCHEDULE = FULL_ON
MAX-SUPPLY-T = 135.0 ECONO-LIMIT-T = 65.0
MIN-HUMIDITY = 30.0 ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
SUPPLY-CFM = 23765. RETURN-CFM = 19012.
RATED-CFM = 23765. MIN-OUTSIDE-AIR = 0.2

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* 614 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 615 * SUPPLY-KW = 0.00078
* 616 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 617 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 618 * HEATING-CAPACITY = -510100. FURNACE-AUX = 0.
* 619 * ZONE-NAMES = (ADMIN&TOOL) ..
* 620 *
* 621 * HV_2 =SYSTEM SYSTEM-TYPE = HVSYS
* 622 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 623 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 624 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 625 * SUPPLY-CFM = 30170. RETURN-CFM = 7844.
* 626 * RATED-CFM = 30170. MIN-OUTSIDE-AIR = 0.74
* 627 * FAN-SCHEDULE = FULL_ON SUPPLY-DELTA-T = 2.4
* 628 * SUPPLY-KW = 0.00078
* 629 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 630 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 631 * HEATING-CAPACITY = -1905300. FURNACE-AUX = 0.
* 632 * ZONE-NAMES = (ADMIN&ELEC) ..
* 633 *
* 634 * HV_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 635 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 636 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 637 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 638 * SUPPLY-CFM = 24090. RETURN-CFM = 16120.
* 639 * RATED-CFM = 24090. MIN-OUTSIDE-AIR = 0.33
* 640 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 641 * SUPPLY-KW = 0.00078
* 642 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 643 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 644 * HEATING-CAPACITY = -855600. FURNACE-AUX = 0.
* 645 * ZONE-NAMES = (CANVAS&ARM) ..
* 646 *
* 647 * MAU_5 =SYSTEM SYSTEM-TYPE = HVSYS
* 648 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 649 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 650 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 651 * SUPPLY-CFM = 5400. RATED-CFM = 5400.
* 652 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 653 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 654 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 655 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 656 * HEATING-CAPACITY = -498400. FURNACE-AUX = 0.
* 657 * ZONE-NAMES = (PAINT&DYN) ..
* 658 *
* 659 * SUPPLY_UH =SYSTEM SYSTEM-TYPE = UHT
* 660 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 661 * RATED-CFM = 27700. SUPPLY-DELTA-T = 0.18
* 662 * SUPPLY-KW = 0.000059
* 663 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 664 * HEATING-CAPACITY = -996800. FURNACE-AUX = 0.
* 665 * ZONE-NAMES = (SHOPSUPPLY) ..
* 666 *
* 667 * MAU_6&7 =SYSTEM SYSTEM-TYPE = HVSYS
* 668 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 669 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 670 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 671 * SUPPLY-CFM = 42220. RATED-CFM = 42220.
* 672 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 673 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 674 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 675 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 676 * HEATING-CAPACITY = -1645000. FURNACE-AUX = 0.
* 677 * ZONE-NAMES = (BATTERIES) ..
* 678 *
* 679 * MAU_1&2A =SYSTEM SYSTEM-TYPE = HVSYS
* 680 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 681 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 682 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 683 * SUPPLY-CFM = 51300. RETURN-CFM = 22982.
* 684 * RATED-CFM = 51300. MIN-OUTSIDE-AIR = 0.55
* 685 * MAX-OA-FRACTION = 0.55 FAN-SCHEDULE = FAN_W_SB
* 686 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 687 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 688 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 689 * HEATING-CAPACITY = -3698000. FURNACE-AUX = 0.
* 690 * ZONE-NAMES = (VEH_MNT) ..
* 691 *
* 692 * MAU_1&2B =SYSTEM SYSTEM-TYPE = HVSYS
* 693 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 694 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 695 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 696 * SUPPLY-CFM = 35460. RETURN-CFM = 15886.
* 697 * RATED-CFM = 35460. MIN-OUTSIDE-AIR = 0.55
* 698 * MAX-OA-FRACTION = 0.55 FAN-SCHEDULE = FAN_W_SB
* 699 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 700 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 701 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 702 * HEATING-CAPACITY = -2560000. FURNACE-AUX = 0.
* 703 * ZONE-NAMES = (PAINT&CUR.) ..
* 704 *
* 705 * MAU_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 706 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 707 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 708 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 709 * SUPPLY-CFM = 30360. RATED-CFM = 30360.
* 710 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 711 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 712 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 713 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 714 * HEATING-CAPACITY = -2196000. FURNACE-AUX = 0.
* 715 * ZONE-NAMES = (VEH_BOD_SH) ..
* 716 *
* 717 * MAU_4_8_9 =SYSTEM SYSTEM-TYPE = HVSYS
* 718 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = PAINT_MAU
* 719 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 720 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 721 * SUPPLY-CFM = 49700. RATED-CFM = 49700.

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* 722 *      MIN-OUTSIDE-AIR = 1.0  FAN-SCHEDULE = PAINT_MAU
* 723 *      SUPPLY-DELTA-T = 2.4  SUPPLY-KW = 0.00078
* 724 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 725 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  NIGHT-VENT-DT = 0.0
* 726 *      HEATING-CAPACITY = -4245000.  FURNACE-AUX = 0.
* 727 *      ZONE-NAMES = (PAINT_BTHS) ..
* 728 *
* 729 * END ..
* 730 * COMPUTE SYSTEMS ..
* 731 *
* 732 * INPUT PLANT ..
```

P D L P R O C E S S O R I N P U T D A T A

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* 733 *
* 734 *
* 735 *      $-----$
* 736 *      $ E Z - D O E P L A N T S I N P U T $
* 737 *      $-----$
* 738 *
* 739 *      $ GENERAL PROJECT DATA
* 740 *
* 741 * TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 742 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 743 *      LINE-3 *      DENVER,      CO      80227      *
* 744 *
* 745 *      LINE-4 *BUILDING 4530, SMA BUILDING      *
* 746 *      LINE-5 *MODEL WITH SET BACK      * ..
* 747 *
* 748 * ABORT      ERRORS ..
* 749 * DIAGNOSTIC      WARNINGS ..
* 750 * PLANT-REPORT      SUMMARY=(PS-A,PS-B,PS-C,PS-D,PS-G,PS-H,PS-I,
* 751 *                      BEPS)
* 752 *
* 753 *      HOURLY-DATA-SAVE = YES ..
* 754 *
* 755 *      $ SCHEDULES
* 756 *
* 757 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 758 *
* 759 *
* 760 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 761 *
* 762 *
* 763 * $ FULL ON SCHEDULE
* 764 * FULL_ON_SC =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 765 *
* 766 *
* 767 *      $ EQUIPMENT DESCRIPTION
* 768 *
* 769 *
* 770 * HTP_1      =PLANT-EQUIPMENT TYPE = HTANK-STORAGE
* 771 *      SIZE = 22.4 ..
* 772 *
* 773 * PLANT-PARAMETERS      CCIRC-HEAD = 63.2 HCIRC-HEAD = 100.0
* 774 *      HCIRC-DESIGN-T-DROP = 20.0 ..
* 775 *
* 776 *
* 777 * ENERGY-RESOURCE      RESOURCE = ELECTRICITY ..
* 778 * ENERGY-RESOURCE      RESOURCE = STEAM ..
* 779 *
* 780 * ENERGY-STORAGE      HEAT-STORE-RATE = 22.4 HEAT-SUPPLY-RATE = 22.4
* 781 *      HTANK-BASE-T = 195.0 HTANK-T-RANGE = 5.0
* 782 *      HEAT-STORE-SCH = FULL_ON_SC ..
* 783 *
* 784 *      HEAT-RECOVERY
* 785 *      SUPPLY-1 = (HTANK-STORAGE)
* 786 *      DEMAND-1 = (SPACE-HEAT,PROCESS-HEAT) ..
* 787 *
* 788 *
* 789 *
* 790 * END ..
* 791 * COMPUTE PLANT ..
* 792 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	STEAM	ELECTRICITY	RECOVERED
CATEGORY OF USE			
SPACE HEAT	39,962.97	0.00	
SPACE COOL	0.00	0.00	
HVAC AUX	0.00	5,576.35	
DOM HOT WTR	207.01	0.00	
AUX SOLAR	0.00	0.00	
LIGHTS	0.00	893.63	
VERT TRANS	0.00	0.00	
MISC EQUIP	0.00	0.00	
	-----	-----	
TOTAL	40,169.98	6,469.98	

TOTAL SITE ENERGY 46639.48 MBTU 285.7 KBTU/SQFT-YR GROSS-AREA 285.7 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 86378.05 MBTU 529.1 KBTU/SQFT-YR GROSS-AREA 529.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 10.4  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	STEAM	ELECTRICITY
	TOTAL (MBTU)	7587.865	611.574
JAN	PEAK (KBTU)	24099.928	1241.908
	DY/HR	5/12	28/11
	TOTAL (MBTU)	5444.344	526.106
FEB	PEAK (KBTU)	21835.632	1241.737
	DY/HR	5/ 9	4/10
	TOTAL (MBTU)	5366.305	577.743
MAR	PEAK (KBTU)	21750.360	1240.741
	DY/HR	27/ 9	3/10
	TOTAL (MBTU)	3024.105	551.161
APR	PEAK (KBTU)	16569.712	1239.079
	DY/HR	3/ 9	1/10
	TOTAL (MBTU)	1925.721	542.524
MAY	PEAK (KBTU)	13214.208	1238.826
	DY/HR	16/ 8	3/10
	TOTAL (MBTU)	1093.786	471.779
JUN	PEAK (KBTU)	6980.922	1236.328
	DY/HR	8/ 6	30/14
	TOTAL (MBTU)	1168.520	479.620
JUL	PEAK (KBTU)	5555.964	1236.328
	DY/HR	25/ 6	29/14
	TOTAL (MBTU)	1148.874	487.484
AUG	PEAK (KBTU)	6041.078	1236.328
	DY/HR	22/ 6	31/14
	TOTAL (MBTU)	1487.204	517.075
SEP	PEAK (KBTU)	9859.286	1237.380
	DY/HR	24/ 8	23/10
	TOTAL (MBTU)	2389.076	566.174
OCT	PEAK (KBTU)	14980.736	1238.526
	DY/HR	28/ 9	26/11
	TOTAL (MBTU)	3789.899	553.933
NOV	PEAK (KBTU)	18598.536	1239.119
	DY/HR	27/ 9	22/10
	TOTAL (MBTU)	5744.163	584.447
DEC	PEAK (KBTU)	21610.208	1241.139
	DY/HR	3/ 9	30/10
	ONE YEAR	40169.865	6469.619
	USE/PEAK	24099.928	1241.908

LDL PROCESSOR INPUT DATA

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* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $ E Z - D O E   L O A D S   I N P U T $
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE   LINE-1 *      EMC      ENGINEERS      INC.      *
* 12 *        LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 *        LINE-3 *      DENVER,      CO      80227      *
* 14 *
* 15 *        LINE-4 *BUILDING 4530, SMA BUILDING      *
* 16 *        LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 17 *
* 18 * ABORT      ERRORS ..
* 19 * DIAGNOSTIC      WARNINGS ..
* 20 * LOADS-REPORT      SUMMARY=(LS-C,LS-D)
* 21 *          HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION      HOLIDAY = NO
* 23 *          X-REF = 0.0
* 24 *          Y-REF = 0.0 ..
* 25 * RUN-PERIOD      JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 * $ SCHEDULES
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
* 35 *          (6,7) (0.35)
* 36 *          (8,9) (0.5,0.6)
* 37 *          (10,11) (0.75)
* 38 *          (12) (0.5)
* 39 *          (13,14) (0.75)
* 40 *          (15) (0.5)
* 41 *          (16,18) (0.4)
* 42 *          (19) (0.3)
* 43 *          (20,24) (0.23) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 46 *          (7,19) (0.07)
* 47 *          (20,24) (0.23) ..
* 48 *
* 49 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 50 *          (6,7) (0.1,0.5)
* 51 *          (8,11) (1.)
* 52 *          (12) (0.8)
* 53 *          (13,16) (1.)
* 54 *          (17,18) (0.5,0.1)
* 55 *          (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 58 *          (6,7) (0.1,0.2)
* 59 *          (8,9) (0.3)
* 60 *          (10,11) (0.4,0.7)
* 61 *          (12,13) (0.4)
* 62 *          (14,15) (0.8)
* 63 *          (16,18) (0.7,0.3,0.1)
* 64 *          (19,24) (0.05) ..
* 65 *
* 66 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 67 *          (8) (1.)
* 68 *          (9,16) (0.1)
* 69 *          (17) (1.)
* 70 *          (18,24) (0.1) ..
* 71 *
* 72 *
* 73 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 *          (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 *          (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 *          (WEH) FULL_OFF_D ..
* 85 *
* 86 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 87 *          (WEH) FULL_OFF_D ..
* 88 *
* 89 *
* 90 * $ FULL ON SCHEDULE
* 91 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE

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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ SHOP INFILTRATION SCHED
* 106 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 107 *
* 108 *
* 109 *
* 110 * $ CONSTRUCTION TYPES
* 111 *
* 112 *
* 113 *
* 114 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 115 *
* 116 * $ ROOF CONSTRUCTION
* 117 * ROOFCON =CONSTRUCTION U-VALUE = 0.030 ..
* 118 *
* 119 * $ WALL CONSTRUCTION
* 120 * WALL_CON =CONSTRUCTION U-VALUE = 0.010 ..
* 121 * LDOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 122 * SDOORCON =CONSTRUCTION U-VALUE = 1.000 ..
* 123 *
* 124 * G_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000
* 125 * PANES = 1
* 126 * GLASS-CONDUCTANCE = 1.130 ..
* 127 *
* 128 *
* 129 *
* 130 *
* 131 * $ SPACE DESCRIPTION
* 132 *
* 133 * ADMIN&TOOL =SPACE AREA = 14228.0 VOLUME = 128052.0
* 134 * TEMPERATURE = (68.) ZONE-TYPE = CONDITIONED
* 135 * PEOPLE-SCHEDULE = PEOPLE_SCH NUMBER-OF-PEOPLE = 40.0
* 136 * PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2
* 137 * PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = REC-FLUOR-RV
* 138 * LIGHTING-KW = 22.9 LIGHTING-SCHEDULE = LIGHT_SCHD
* 139 * SOURCE-SCHEDULE = FULL_ON SOURCE-TYPE = HOT-WATER
* 140 * SOURCE-BTU/HR = 23630.0 SOURCE-SENSIBLE = 0.0
* 141 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5
* 142 * INF-SCHEDULE = FULL_ON ..
* 143 *
* 144 * U-W HEIGHT = 110.0 WIDTH = 129.5 CONS = FLOORCON ..
* 145 *
* 146 * ROOF HEIGHT = 110.0 WIDTH = 129.5 CONS = ROOFCON
* 147 * TILT = 0 ..
* 148 *
* 149 * E-W HEIGHT = 9.0 WIDTH = 129.5 CONS = WALL_CON
* 150 * AZIMUTH = 0 ..
* 151 *
* 152 * WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G_TYPE1
* 153 * MULTIPLIER = 13.0 ..
* 154 *
* 155 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON
* 156 * MULTIPLIER = 3.0 ..
* 157 *
* 158 * E-W HEIGHT = 9.0 WIDTH = 86.0 CONS = WALL_CON
* 159 * AZIMUTH = 0 ..
* 160 *
* 161 * WINDOW HEIGHT = 4.0 WIDTH = 4.0 G-T = G_TYPE1
* 162 * MULTIPLIER = 12.0 ..
* 163 *
* 164 * DOOR HEIGHT = 7.5 WIDTH = 2.0 CONS = SDOORCON
* 165 * MULTIPLIER = 2.0 ..
* 166 *
* 167 *
* 168 * VEH_MNT =SPACE AREA = 33660.0 VOLUME = 1000000.0
* 169 * TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED
* 170 * PEOPLE-SCHEDULE = PEOPLE_SCH NUMBER-OF-PEOPLE = 50.0
* 171 * PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2
* 172 * PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = INCAND
* 173 * LIGHTING-KW = 14.15 LIGHTING-SCHEDULE = LIGHT_SCHD
* 174 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0
* 175 * INF-SCHEDULE = FULL_ON ..
* 176 *
* 177 * U-W HEIGHT = 165.0 WIDTH = 204.0 CONS = FLOORCON ..
* 178 *
* 179 * ROOF HEIGHT = 165.0 WIDTH = 204.0 CONS = ROOFCON
* 180 * TILT = 0 ..
* 181 *
* 182 * E-W HEIGHT = 32.5 WIDTH = 204.0 CONS = WALL_CON
* 183 * AZIMUTH = 0 ..
* 184 *
* 185 * DOOR HEIGHT = 14.0 WIDTH = 27.0 CONS = LDOORCON
* 186 * MULTIPLIER = 6.0 ..
* 187 *
* 188 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON
* 189 * MULTIPLIER = 3.0 ..
* 190 *
* 191 * E-W HEIGHT = 32.5 WIDTH = 204.0 CONS = WALL_CON
* 192 * AZIMUTH = 180 ..
* 193 *
* 194 * DOOR HEIGHT = 14.0 WIDTH = 27.0 CONS = LDOORCON
* 195 * MULTIPLIER = 6.0 ..
* 196 *
* 197 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON
* 198 * MULTIPLIER = 3.0 ..
* 199 *
* 200 *
* 201 * PAINT&CUR. =SPACE AREA = 29040.0 VOLUME = 943800.0
* 202 * TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED
* 203 * PEOPLE-SCHEDULE = PEOPLE_SCH NUMBER-OF-PEOPLE = 40.0
* 204 * PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2
* 205 * PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = INCAND
* 206 * LIGHTING-KW = 8.1 LIGHTING-SCHEDULE = LIGHT_SCHD
* 207 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.96
* 208 * INF-SCHEDULE = FULL_ON ..
* 209 *
* 210 * U-W HEIGHT = 165.0 WIDTH = 176.0 CONS = FLOORCON ..

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* 211 *
* 212 *      ROOF      HEIGHT = 165.0  WIDTH = 176.0  CONS = ROOFCON
* 213 *      TILT = 0      ..
* 214 *
* 215 *      E-W      HEIGHT = 32.5  WIDTH = 176.0  CONS = WALL_CON
* 216 *      AZIMUTH = 0      ..
* 217 *
* 218 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 219 *      MULTIPLIER = 5.0      ..
* 220 *
* 221 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 222 *      MULTIPLIER = 2.0      ..
* 223 *
* 224 *      E-W      HEIGHT = 32.5  WIDTH = 176.0  CONS = WALL_CON
* 225 *      AZIMUTH = 180      ..
* 226 *
* 227 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 228 *      MULTIPLIER = 5.0      ..
* 229 *
* 230 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 231 *      MULTIPLIER = 2.0      ..
* 232 *
* 233 *      E-W      HEIGHT = 32.5  WIDTH = 165.0  CONS = WALL_CON
* 234 *      AZIMUTH = 270      ..
* 235 *
* 236 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 237 *      MULTIPLIER = 3.0      ..
* 238 *
* 239 *
* 240 *      VEH_BOD_SH =SPACE      AREA = 14628.0  VOLUME = 475410.0
* 241 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 242 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 243 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 244 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = INCAND
* 245 *      LIGHTING-KW = 6.8  LIGHTING-SCHEDULE = LIGHT_SCHD
* 246 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.43
* 247 *      INF-SCHEDULE = FULL_ON      ..
* 248 *
* 249 *      U-W      HEIGHT = 69.0  WIDTH = 212.0  CONS = FLOORCON ..
* 250 *
* 251 *      ROOF      HEIGHT = 69.0  WIDTH = 212.0  CONS = ROOFCON
* 252 *      TILT = 0      ..
* 253 *
* 254 *      E-W      HEIGHT = 32.5  WIDTH = 212.0  CONS = WALL_CON
* 255 *      AZIMUTH = 0      ..
* 256 *
* 257 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 258 *      MULTIPLIER = 4.0      ..
* 259 *
* 260 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 261 *      MULTIPLIER = 2.0      ..
* 262 *
* 263 *      E-W      HEIGHT = 32.5  WIDTH = 212.0  CONS = WALL_CON
* 264 *      AZIMUTH = 180      ..
* 265 *
* 266 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 267 *      MULTIPLIER = 5.0      ..
* 268 *
* 269 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 270 *      MULTIPLIER = 3.0      ..
* 271 *
* 272 *      E-W      HEIGHT = 32.5  WIDTH = 69.0  CONS = WALL_CON
* 273 *      AZIMUTH = 270      ..
* 274 *
* 275 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 276 *      MULTIPLIER = 2.0      ..
* 277 *
* 278 *
* 279 *      ADMIN&ELEC =SPACE      AREA = 10085.0  VOLUME = 90765.0
* 280 *      TEMPERATURE = (68.)  ZONE-TYPE = CONDITIONED
* 281 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 282 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 283 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 284 *      LIGHTING-KW = 9.79  LIGHTING-SCHEDULE = LIGHT_SCHD
* 285 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 286 *      INF-SCHEDULE = FULL_ON      ..
* 287 *
* 288 *      U-W      HEIGHT = 83.0  WIDTH = 129.5  CONS = FLOORCON ..
* 289 *
* 290 *      ROOF      HEIGHT = 83.0  WIDTH = 129.5  CONS = ROOFCON
* 291 *      TILT = 0      ..
* 292 *
* 293 *      E-W      HEIGHT = 9.0  WIDTH = 125.0  CONS = WALL_CON
* 294 *      AZIMUTH = 270      ..
* 295 *
* 296 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 297 *      MULTIPLIER = 3.0      ..
* 298 *
* 299 *      DOOR      HEIGHT = 14.0  WIDTH = 14.5  CONS = LDOORCON ..
* 300 *
* 301 *      DOOR      HEIGHT = 9.0  WIDTH = 14.5  CONS = LDOORCON
* 302 *      MULTIPLIER = 3.0      ..
* 303 *
* 304 *
* 305 *      CANVAS&ARM =SPACE      AREA = 21746.0  VOLUME = 130020.0
* 306 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 307 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 308 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 309 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 310 *      LIGHTING-KW = 13.67  LIGHTING-SCHEDULE = LIGHT_SCHD
* 311 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 312 *      INF-SCHEDULE = FULL_ON      ..
* 313 *
* 314 *      U-W      HEIGHT = 84.0  WIDTH = 259.0  CONS = FLOORCON ..
* 315 *
* 316 *      ROOF      HEIGHT = 84.0  WIDTH = 259.0  CONS = ROOFCON
* 317 *      TILT = 0      ..
* 318 *

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* 319 *      E-W      HEIGHT = 9.0  WIDTH = 129.5  CONS = WALL_CON
* 320 *      AZIMUTH = 180  ..
* 321 *
* 322 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 323 *      MULTIPLIER = 3.0  ..
* 324 *
* 325 *      E-W      HEIGHT = 25.0  WIDTH = 120.0  CONS = WALL_CON
* 326 *      AZIMUTH = 90  ..
* 327 *
* 328 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 329 *      MULTIPLIER = 3.0  ..
* 330 *
* 331 *
* 332 * PAINT&DYN =SPACE  AREA = 1775.0  VOLUME = 15975.0
* 333 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 334 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 15.0
* 335 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 336 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 337 *      LIGHTING-KW = 0.45  LIGHTING-SCHEDULE = LIGHT_SCHD
* 338 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 339 *      INF-SCHEDULE = FULL_ON  ..
* 340 *
* 341 *      U-W      HEIGHT = 22.0  WIDTH = 129.5  CONS = FLOORCON ..
* 342 *
* 343 *      ROOF      HEIGHT = 22.0  WIDTH = 129.5  CONS = ROOFCON
* 344 *      TILT = 0  ..
* 345 *
* 346 *
* 347 * SHOPSUPPLY =SPACE  AREA = 29641.0  VOLUME = 741025.0
* 348 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 349 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 350 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 351 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 352 *      LIGHTING-KW = 4.7  LIGHTING-SCHEDULE = LIGHT_SCHD
* 353 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 354 *      INF-SCHEDULE = FULL_ON  ..
* 355 *
* 356 *      U-W      HEIGHT = 228.9  WIDTH = 129.5  CONS = FLOORCON ..
* 357 *
* 358 *      ROOF      HEIGHT = 228.5  WIDTH = 129.5  CONS = ROOFCON
* 359 *      TILT = 0  ..
* 360 *
* 361 *      E-W      HEIGHT = 25.0  WIDTH = 211.0  CONS = WALL_CON
* 362 *      AZIMUTH = 0  ..
* 363 *
* 364 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 365 *      MULTIPLIER = 2.0  ..
* 366 *
* 367 *      DOOR      HEIGHT = 8.0  WIDTH = 8.0  CONS = LDOORCON
* 368 *      MULTIPLIER = 2.0  ..
* 369 *
* 370 *
* 371 * BATTERIES =SPACE  AREA = 4705.0  VOLUME = 84690.0
* 372 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 373 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 374 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 375 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 376 *      LIGHTING-KW = 11.08  LIGHTING-SCHEDULE = LIGHT_SCHD
* 377 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 378 *      INF-SCHEDULE = FULL_ON  ..
* 379 *
* 380 *      U-W      HEIGHT = 39.2  WIDTH = 120.0  CONS = FLOORCON ..
* 381 *
* 382 *      ROOF      HEIGHT = 39.2  WIDTH = 120.0  CONS = ROOFCON
* 383 *      TILT = 0  ..
* 384 *
* 385 *      E-W      HEIGHT = 18.0  WIDTH = 120.0  CONS = WALL_CON
* 386 *      AZIMUTH = 180  ..
* 387 *
* 388 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 389 *      MULTIPLIER = 2.0  ..
* 390 *
* 391 *
* 392 * PAINT_BTHS =SPACE  AREA = 3742.0  VOLUME = 44688.0
* 393 *      TEMPERATURE = (72.)  ZONE-TYPE = CONDITIONED
* 394 *      AREA/PERSON = 100.0  INF-METHOD = NONE  ..
* 395 *
* 396 *      U-W      HEIGHT = 61.2  WIDTH = 61.2  CONS = FLOORCON ..
* 397 *
* 398 *      ROOF      HEIGHT = 61.2  WIDTH = 61.2  CONS = ROOFCON
* 399 *      TILT = 0  ..
* 400 *
* 401 *
* 402 * END  ..
* 403 * COMPUTE LOADS  ..
* 404 *
* 405 * INPUT SYSTEMS  ..

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**COMPUTER SIMULATIONS**  
BUILDING 4530

RUN 3 - DDC

SDL PROCESSOR INPUT DATA

4/18/1995 11:31:49 SDL RUN 1

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* 406 *
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$-----$
$EZ - DOE SYSTEMS INPUT $
$-----$

$ GENERAL PROJECT DATA

* 414 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 415 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 416 * LINE-3 * DENVER, CO 80227 *
* 417 *
* 418 * LINE-4 *BUILDING 4530, SMA BUILDING *
* 419 * LINE-5 *MODEL WITH SET BACK AND DDC * ..
* 420 * ABORT ERRORS ..
* 421 * DIAGNOSTIC WARNINGS ..
* 422 * SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-K,SS-O)
* 423 * HOURLY-DATA-SAVE = YES ..
* 424 *

$ SCHEDULES

* 427 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 428 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 429 * HEAT_H_D =DAY-SCHEDULE (1,6) (55.)
* 430 * (7,17) (68.)
* 431 * (18,24) (55.) ..
* 432 * HEAT_L_D =DAY-SCHEDULE (1,6) (47.)
* 433 * (7,17) (60.)
* 434 * (18,24) (47.) ..
* 435 * HEAT_68_D =DAY-SCHEDULE (1,24) (68.) ..
* 436 * HEAT_60_D =DAY-SCHEDULE (1,24) (60.) ..
* 437 * HEAT_72_D =DAY-SCHEDULE (1,24) (72.) ..
* 438 * PAINT_MAUW =DAY-SCHEDULE (1,7) (0.)
* 439 * (8,17) (1.)
* 440 * (18,24) (0.) ..
* 441 * FAN_WSB_D =DAY-SCHEDULE (1,5) (0.)
* 442 * (6,15) (1.)
* 443 * (16,24) (0.) ..
* 444 * HT60_WSB_D =DAY-SCHEDULE (1,5) (47.)
* 445 * (6,15) (60.)
* 446 * (16,24) (47.) ..
* 447 * HEAT_50_D =DAY-SCHEDULE (1,24) (50.) ..
* 448 * HT68_WSB_D =DAY-SCHEDULE (1,5) (50.)
* 449 * (6,15) (68.)
* 450 * (16,24) (50.) ..
* 451 * HV2_SB_D =DAY-SCHEDULE (1,5) (65.)
* 452 * (6,15) (68.)
* 453 * (16,24) (65.) ..
* 454 * HEAT_47_D =DAY-SCHEDULE (1,24) (47.) ..
* 455 *
* 456 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 457 *
* 458 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 459 *
* 460 * HEAT_H_W =WEEK-SCHEDULE (ALL) HEAT_H_D ..
* 461 *
* 462 * HEAT_L_W =WEEK-SCHEDULE (ALL) HEAT_L_D ..
* 463 *
* 464 * HEAT_68_W =WEEK-SCHEDULE (ALL) HEAT_68_D ..
* 465 *
* 466 * HEAT_60_W =WEEK-SCHEDULE (ALL) HEAT_60_D ..
* 467 *
* 468 * HEAT_72_W =WEEK-SCHEDULE (ALL) HEAT_72_D ..
* 469 *
* 470 * PAINT_MAUW =WEEK-SCHEDULE (ALL) PAINT_MAUW ..
* 471 *
* 472 * FAN_WSB_W =WEEK-SCHEDULE (ALL) FAN_WSB_D ..
* 473 *
* 474 * HT60_WSB_W =WEEK-SCHEDULE (ALL) HT60_WSB_D ..
* 475 *
* 476 * HT68_WSB_W =WEEK-SCHEDULE (ALL) HT68_WSB_D ..
* 477 *
* 478 * HV2_WSB_W =WEEK-SCHEDULE (ALL) HV2_SB_D ..
* 479 *
* 480 *
* 481 * $ FULL ON SCHEDULE
* 482 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 483 *
* 484 * $ FULL OFF SCHEDULE
* 485 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 486 *
* 487 * $ HIGH HEAT SCHEDULE
* 488 * HEAT_H_SCH =SCHEDULE THRU DEC 31 HEAT_H_W ..
* 489 *
* 490 * $ HEAT LOW SCHEDULE
* 491 * HEAT_L_SCH =SCHEDULE THRU DEC 31 HEAT_L_W ..
* 492 *
* 493 * $ HEAT 68 DEG
* 494 * HEAT_68_Y =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 495 *
* 496 * $ HEAT 60 DEG
* 497 * HEAT_60_Y =SCHEDULE THRU DEC 31 HEAT_60_W ..
* 498 *
* 499 * $ HEAT 72 DEG
* 500 * HEAT_72_Y =SCHEDULE THRU DEC 31 HEAT_72_W ..
* 501 *
* 502 * $ PAINT BOOTH MAU SCHED
* 503 * PAINT_MAU =SCHEDULE THRU DEC 31 PAINT_MAUW ..
* 504 *
* 505 * $ FAN SCHD WITH SET BACK

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* 506 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 507 *
* 508 * $ HEAT 60F W SET BACK
* 509 * HT60_W_SB =SCHEDULE THRU DEC 31 HT60_WSB_W ..
* 510 *
* 511 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 512 *
* 513 * $ HV2 SETBACK SCHED
* 514 * HV2_HT_SB =SCHEDULE THRU DEC 31 HV2 HTSB_W ..
* 515 *
* 516 *
* 517 *
* 518 * $ ZONE DESCRIPTION
* 519 *
* 520 * ADMIN&TOOL =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 521 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 522 * THERMOSTAT-TYPE = PROPORTIONAL
* 523 * BASEBOARD-CTRL = THERMOSTATIC
* 524 * BASEBOARD-RATING = -66440. ASSIGNED-CFM = 23765.
* 525 * OUTSIDE-AIR-CFM = 4700. SIZING-OPTION = FROM-LOADS
* 526 * RATED-CFM = 23765.0 MIN-CFM-RATIO = 1.0
* 527 * EXHAUST-CFM = 4700.0 HEATING-CAPACITY = -510100.0 ..
* 528 *
* 529 * VEH_MNT =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 530 * HEAT-TEMP-SCH = HT60 W SB ZONE-TYPE = CONDITIONED
* 531 * THERMOSTAT-TYPE = PROPORTIONAL
* 532 * BASEBOARD-CTRL = THERMOSTATIC
* 533 * BASEBOARD-RATING = -750000. ASSIGNED-CFM = 51300.
* 534 * OUTSIDE-AIR-CFM = 51300. SIZING-OPTION = FROM-LOADS
* 535 * RATED-CFM = 51300.0 MIN-CFM-RATIO = 1.0
* 536 * EXHAUST-CFM = 51300.0 HEATING-CAPACITY = -3698000.0 ..
* 537 *
* 538 * PAINT&CUR. =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 539 * HEAT-TEMP-SCH = HT60 W SB ZONE-TYPE = CONDITIONED
* 540 * THERMOSTAT-TYPE = PROPORTIONAL
* 541 * BASEBOARD-CTRL = THERMOSTATIC
* 542 * BASEBOARD-RATING = -613000. ASSIGNED-CFM = 35460.
* 543 * OUTSIDE-AIR-CFM = 35460. SIZING-OPTION = FROM-LOADS
* 544 * RATED-CFM = 35460.0 MIN-CFM-RATIO = 1.0
* 545 * HEATING-CAPACITY = -2560000.0 ..
* 546 *
* 547 * VEH_BOD_SH =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 548 * HEAT-TEMP-SCH = HT60 W SB ZONE-TYPE = CONDITIONED
* 549 * THERMOSTAT-TYPE = PROPORTIONAL
* 550 * BASEBOARD-CTRL = THERMOSTATIC
* 551 * BASEBOARD-RATING = -385000. ASSIGNED-CFM = 30360.
* 552 * OUTSIDE-AIR-CFM = 30360. SIZING-OPTION = FROM-LOADS
* 553 * RATED-CFM = 30360.0 MIN-CFM-RATIO = 1.0
* 554 * HEATING-CAPACITY = -2196000.0 ..
* 555 *
* 556 * ADMIN&ELEC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 557 * HEAT-TEMP-SCH = HV2 HT SB ZONE-TYPE = CONDITIONED
* 558 * THERMOSTAT-TYPE = PROPORTIONAL
* 559 * BASEBOARD-CTRL = THERMOSTATIC
* 560 * BASEBOARD-RATING = -17200. ASSIGNED-CFM = 30170.
* 561 * OUTSIDE-AIR-CFM = 22290. SIZING-OPTION = FROM-LOADS
* 562 * RATED-CFM = 30170.0 MIN-CFM-RATIO = 1.0
* 563 * EXHAUST-CFM = 22290.0 HEATING-CAPACITY = -1905300.0 ..
* 564 *
* 565 * CANVAS&ARM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 566 * HEAT-TEMP-SCH = HT68 W SB ZONE-TYPE = CONDITIONED
* 567 * THERMOSTAT-TYPE = PROPORTIONAL
* 568 * BASEBOARD-CTRL = THERMOSTATIC
* 569 * BASEBOARD-RATING = -29400. ASSIGNED-CFM = 24090.
* 570 * OUTSIDE-AIR-CFM = 7970. SIZING-OPTION = FROM-LOADS
* 571 * RATED-CFM = 24090.0 MIN-CFM-RATIO = 1.0
* 572 * EXHAUST-CFM = 7970.0 HEATING-CAPACITY = -816700.0 ..
* 573 *
* 574 * PAINT&DYN =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 575 * HEAT-TEMP-SCH = HT60 W SB ZONE-TYPE = CONDITIONED
* 576 * THERMOSTAT-TYPE = PROPORTIONAL
* 577 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 5400.
* 578 * OUTSIDE-AIR-CFM = 5400. SIZING-OPTION = FROM-LOADS
* 579 * RATED-CFM = 5400.0 MIN-CFM-RATIO = 1.0
* 580 * EXHAUST-CFM = 5400.0 HEATING-CAPACITY = -498400.0 ..
* 581 *
* 582 * SHOPSUPPLY =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 583 * HEAT-TEMP-SCH = HT60 W SB ZONE-TYPE = CONDITIONED
* 584 * THERMOSTAT-TYPE = PROPORTIONAL
* 585 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 27700.
* 586 * SIZING-OPTION = FROM-LOADS RATED-CFM = 27700.0
* 587 * MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -996800.0 ..
* 588 *
* 589 * BATTERIES =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 590 * HEAT-TEMP-SCH = HT60 W SB ZONE-TYPE = CONDITIONED
* 591 * THERMOSTAT-TYPE = PROPORTIONAL
* 592 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 21000.
* 593 * OUTSIDE-AIR-CFM = 21000. SIZING-OPTION = FROM-LOADS
* 594 * RATED-CFM = 21000.0 MIN-CFM-RATIO = 1.0
* 595 * EXHAUST-CFM = 21000.0 HEATING-CAPACITY = -1645000.0 ..
* 596 *
* 597 * PAINT_BTHS =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 85.0
* 598 * HEAT-TEMP-SCH = HEAT 72 Y ZONE-TYPE = CONDITIONED
* 599 * THERMOSTAT-TYPE = PROPORTIONAL
* 600 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 49700.
* 601 * OUTSIDE-AIR-CFM = 49700. SIZING-OPTION = FROM-LOADS
* 602 * RATED-CFM = 49700.0 MIN-CFM-RATIO = 1.0
* 603 * EXHAUST-CFM = 49700.0 HEATING-CAPACITY = -4255000.0 ..
* 604 *
* 605 *
* 606 * $ SYSTEM DESCRIPTION
* 607 *
* 608 * HV_1 =SYSTEM SYSTEM-TYPE = HVSYS
* 609 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 610 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 611 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 612 * SUPPLY-CFM = 23765. RETURN-CFM = 19012.
* 613 * RATED-CFM = 23765. MIN-OUTSIDE-AIR = 0.2

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* 614 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 615 * SUPPLY-KW = 0.00078
* 616 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 617 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 618 * HEATING-CAPACITY = -510100. FURNACE-AUX = 0.
* 619 * ZONE-NAMES = (ADMIN&TOOL) ..
* 620 *
* 621 * HV_2 =SYSTEM SYSTEM-TYPE = HVSYS
* 622 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 623 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 624 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 625 * SUPPLY-CFM = 30170. RETURN-CFM = 7844.
* 626 * RATED-CFM = 30170. MIN-OUTSIDE-AIR = 0.74
* 627 * FAN-SCHEDULE = FULL_ON SUPPLY-DELTA-T = 2.4
* 628 * SUPPLY-KW = 0.00078
* 629 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 630 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 631 * HEATING-CAPACITY = -1905300. FURNACE-AUX = 0.
* 632 * ZONE-NAMES = (ADMIN&ELEC) ..
* 633 *
* 634 * HV_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 635 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 636 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 637 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 638 * SUPPLY-CFM = 24090. RETURN-CFM = 16120.
* 639 * RATED-CFM = 24090. MIN-OUTSIDE-AIR = 0.33
* 640 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 641 * SUPPLY-KW = 0.00078
* 642 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 643 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 644 * HEATING-CAPACITY = -855600. FURNACE-AUX = 0.
* 645 * ZONE-NAMES = (CANVAS&ARM) ..
* 646 *
* 647 * MAU_5 =SYSTEM SYSTEM-TYPE = HVSYS
* 648 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 649 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 650 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 651 * SUPPLY-CFM = 5400. RATED-CFM = 5400.
* 652 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 653 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 654 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 655 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 656 * HEATING-CAPACITY = -498400. FURNACE-AUX = 0.
* 657 * ZONE-NAMES = (PAINT&DYN) ..
* 658 *
* 659 * SUPPLY_UH =SYSTEM SYSTEM-TYPE = UHT
* 660 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 661 * RATED-CFM = 27700. SUPPLY-DELTA-T = 0.18
* 662 * SUPPLY-KW = 0.000059
* 663 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 664 * HEATING-CAPACITY = -996800. FURNACE-AUX = 0.
* 665 * ZONE-NAMES = (SHOPSUPPLY) ..
* 666 *
* 667 * MAU_6&7 =SYSTEM SYSTEM-TYPE = HVSYS
* 668 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 669 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 670 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 671 * SUPPLY-CFM = 42220. RATED-CFM = 42220.
* 672 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 673 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 674 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 675 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 676 * HEATING-CAPACITY = -1645000. FURNACE-AUX = 0.
* 677 * ZONE-NAMES = (BATTERIES) ..
* 678 *
* 679 * MAU_1&2A =SYSTEM SYSTEM-TYPE = HVSYS
* 680 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 681 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 682 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 683 * SUPPLY-CFM = 51300. RETURN-CFM = 22982.
* 684 * RATED-CFM = 51300. MIN-OUTSIDE-AIR = 0.55
* 685 * MAX-OA-FRACTION = 0.55 FAN-SCHEDULE = FAN_W_SB
* 686 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 687 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 688 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 689 * HEATING-CAPACITY = -3698000. FURNACE-AUX = 0.
* 690 * ZONE-NAMES = (VEH_MNT) ..
* 691 *
* 692 * MAU_1&2B =SYSTEM SYSTEM-TYPE = HVSYS
* 693 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 694 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 695 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 696 * SUPPLY-CFM = 35460. RETURN-CFM = 15886.
* 697 * RATED-CFM = 35460. MIN-OUTSIDE-AIR = 0.55
* 698 * MAX-OA-FRACTION = 0.55 FAN-SCHEDULE = FAN_W_SB
* 699 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 700 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 701 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 702 * HEATING-CAPACITY = -2560000. FURNACE-AUX = 0.
* 703 * ZONE-NAMES = (PAINT&CUR.) ..
* 704 *
* 705 * MAU_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 706 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 707 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 708 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 709 * SUPPLY-CFM = 30360. RATED-CFM = 30360.
* 710 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 711 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 712 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 713 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 714 * HEATING-CAPACITY = -2196000. FURNACE-AUX = 0.
* 715 * ZONE-NAMES = (VEH_BOD_SH) ..
* 716 *
* 717 * MAU_4_8_&9 =SYSTEM SYSTEM-TYPE = HVSYS
* 718 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = PAINT_MAU
* 719 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 720 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 721 * SUPPLY-CFM = 49700. RATED-CFM = 49700.

```

```
* 722 *      MIN-OUTSIDE-AIR = 1.0  FAN-SCHEDULE = PAINT_MAU
* 723 *      SUPPLY-DELTA-T = 2.4  SUPPLY-KW = 0.00078
* 724 *      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 725 *      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY  NIGHT-VENT-DT = 0.0
* 726 *      HEATING-CAPACITY = -4245000.  FURNACE-AUX = 0.
* 727 *      ZONE-NAMES = (PAINT_BTHS)  ..
* 728 *
* 729 * END  ..
* 730 * COMPUTE SYSTEMS  ..
* 731 *
* 732 * INPUT PLANT  ..
```



PDL PROCESSOR INPUT DATA

4/18/1995 11:31:49 PDL RUN 1

```

* 733 *
* 734 *
* 735 *           $-----$
* 736 *           $EZ - DOE PLANTS INPUT$
* 737 *           $-----$
* 738 *
* 739 *           $ GENERAL PROJECT DATA
* 740 *
* 741 * TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 742 *       LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 743 *       LINE-3 *      DENVER,      CO      80227      *
* 744 *
* 745 *       LINE-4 *BUILDING 4530, SMA BUILDING      *
* 746 *       LINE-5 *MODEL WITH SET BACK AND DDC      * ..
* 747 *
* 748 * ABORT      ERRORS ..
* 749 * DIAGNOSTIC      WARNINGS ..
* 750 * PLANT-REPORT      SUMMARY=(PS-A,PS-B,BEPS)
* 751 *
* 752 *      HOURLY-DATA-SAVE = YES ..
* 753 *
* 754 *           $ SCHEDULES
* 755 *
* 756 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 757 *
* 758 *
* 759 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 760 *
* 761 *
* 762 * $ FULL ON SCHEDULE
* 763 * FULL_ON_SC =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 764 *
* 765 *
* 766 *
* 767 *           $ EQUIPMENT DESCRIPTION
* 768 *
* 769 * HTP_1      =PLANT-EQUIPMENT TYPE = HTANK-STORAGE
* 770 *           SIZE = 22.4 ..
* 771 *
* 772 * PLANT-PARAMETERS      CCIRC-HEAD = 63.2 HCIRC-HEAD = 100.0
* 773 *           HCIRC-DESIGN-T-DROP = 20.0 ..
* 774 *
* 775 *
* 776 * ENERGY-RESOURCE      RESOURCE = ELECTRICITY ..
* 777 * ENERGY-RESOURCE      RESOURCE = STEAM ..
* 778 *
* 779 * ENERGY-STORAGE      HEAT-STORE-RATE = 22.4 HEAT-SUPPLY-RATE = 22.4
* 780 *           HTANK-BASE-T = 195.0 HTANK-T-RANGE = 5.0
* 781 *           HEAT-STORE-SCH = FULL_ON_SC ..
* 782 *
* 783 * HEAT-RECOVERY
* 784 *       SUPPLY-1 = (HTANK-STORAGE)
* 785 *       DEMAND-1 = (SPACE-HEAT,PROCESS-HEAT) ..
* 786 *
* 787 *
* 788 *
* 789 * END ..
* 790 * COMPUTE PLANT ..
* 791 * STOP ..

```

ENERGY TYPE IN SITE MBTU-	STEAM	ELECTRICITY	RECOVERED
CATEGORY OF USE			
SPACE HEAT	38,831.10	0.00	
SPACE COOL	0.00	0.00	
HVAC AUX	0.00	5,580.76	
DOM HOT WTR	207.01	0.00	
AUX SOLAR	0.00	0.00	
LIGHTS	0.00	893.58	
VERT TRANS	0.00	0.00	
MISC EQUIP	0.00	0.00	
	-----	-----	
TOTAL	39,038.11	6,474.34	

TOTAL SITE ENERGY 45512.52 MBTU 278.8 KBTU/SQFT-YR GROSS-AREA 278.8 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 84506.33 MBTU 517.6 KBTU/SQFT-YR GROSS-AREA 517.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 10.1  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	STEAM	ELECTRICITY
	TOTAL (MBTU)	7463.962	611.311
JAN	PEAK (KBTU)	24061.784	1241.555
	DY/HR	5/12	28/11
	TOTAL (MBTU)	5318.054	525.869
FEB	PEAK (KBTU)	21451.624	1241.384
	DY/HR	5/ 9	4/10
	TOTAL (MBTU)	5226.063	577.480
MAR	PEAK (KBTU)	21211.848	1240.388
	DY/HR	27/ 9	3/10
	TOTAL (MBTU)	2905.046	550.909
APR	PEAK (KBTU)	16069.480	1238.726
	DY/HR	3/ 9	1/10
	TOTAL (MBTU)	1832.945	544.061
MAY	PEAK (KBTU)	12657.776	1238.473
	DY/HR	16/ 8	3/10
	TOTAL (MBTU)	1047.609	471.796
JUN	PEAK (KBTU)	6578.166	1235.975
	DY/HR	8/ 6	30/14
	TOTAL (MBTU)	1144.529	480.750
JUL	PEAK (KBTU)	5190.638	1235.975
	DY/HR	25/ 6	29/14
	TOTAL (MBTU)	1111.930	487.941
AUG	PEAK (KBTU)	5645.498	1235.975
	DY/HR	22/ 6	31/14
	TOTAL (MBTU)	1424.578	519.071
SEP	PEAK (KBTU)	9449.142	1237.027
	DY/HR	24/ 6	23/10
	TOTAL (MBTU)	2281.590	567.474
OCT	PEAK (KBTU)	14462.744	1238.173
	DY/HR	28/ 9	26/11
	TOTAL (MBTU)	3668.782	553.680
NOV	PEAK (KBTU)	18068.296	1238.766
	DY/HR	27/ 9	22/10
	TOTAL (MBTU)	5612.904	584.184
DEC	PEAK (KBTU)	21238.344	1240.786
	DY/HR	3/ 9	30/10
	ONE YEAR	39037.989	6474.526
	USE/PEAK	24061.784	1241.555

**COMPUTER SIMULATIONS**  
**BUILDING 4530**

**RUN 4 - FORCED VENTILATION**

## LDL PROCESSOR INPUT DATA

3/18/1995 17: 5:42 LDL RUN 1

```
* 3 *
* 4 *
* 5 *
* 6 * $-----$
* 7 * $EZ - DOE LOADS INPUT$
* 8 * $-----$
* 9 *
* 10 * $ GENERAL PROJECT DATA
* 11 * TITLE LINE-1 * EMC ENGINEERS INC. *
* 12 * LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 13 * LINE-3 * DENVER, CO 80227 *
* 14 *
* 15 * LINE-4 *BUILDING 4530, SMA BUILDING *
* 16 * LINE-5 *SET BACK, DDC, AND FORCED VENTILATION * ..
* 17 *
* 18 * ABORT ERRORS ..
* 19 * DIAGNOSTIC WARNINGS ..
* 20 * LOADS-REPORT SUMMARY=(LS-C,LS-D)
* 21 * HOURLY-DATA-SAVE = YES ..
* 22 * BUILDING-LOCATION HOLIDAY = NO
* 23 * X-REF = 0.0
* 24 * Y-REF = 0.0 ..
* 25 * RUN-PERIOD JAN 1 1994 THRU DEC 31 1994 ..
* 26 *
* 27 *
* 28 * $ SCHEDULES
* 29 *
* 30 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 31 *
* 32 * FULL_OFF_D =DAY-SCHEDULE (1,24) (0.) ..
* 33 *
* 34 * LIGHT_ON_D =DAY-SCHEDULE (1,5) (0.23)
* 35 * (6,7) (0.35)
* 36 * (8,9) (0.5,0.6)
* 37 * (10,11) (0.75)
* 38 * (12) (0.5)
* 39 * (13,14) (0.75)
* 40 * (15) (0.5)
* 41 * (16,18) (0.4)
* 42 * (19) (0.3)
* 43 * (20,24) (0.23) ..
* 44 *
* 45 * LT_ON_WKND =DAY-SCHEDULE (1,6) (0.23)
* 46 * (7,19) (0.07)
* 47 * (20,24) (0.23) ..
* 48 *
* 49 * PEOPLE_D =DAY-SCHEDULE (1,5) (0.)
* 50 * (6,7) (0.1,0.5)
* 51 * (8,11) (1.)
* 52 * (12) (0.8)
* 53 * (13,16) (1.)
* 54 * (17,18) (0.5,0.1)
* 55 * (19,24) (0.) ..
* 56 *
* 57 * EQUIP_ON_D =DAY-SCHEDULE (1,5) (0.05)
* 58 * (6,7) (0.1,0.2)
* 59 * (8,9) (0.3)
* 60 * (10,11) (0.4,0.7)
* 61 * (12,13) (0.4)
* 62 * (14,15) (0.8)
* 63 * (16,18) (0.7,0.3,0.1)
* 64 * (19,24) (0.05) ..
* 65 *
* 66 * SHOP_INF_D =DAY-SCHEDULE (1,7) (0.1)
* 67 * (8) (1.)
* 68 * (9,16) (0.1)
* 69 * (17) (1.)
* 70 * (18,24) (0.1) ..
* 71 *
* 72 *
* 73 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 74 *
* 75 * FULL_OFF_W =WEEK-SCHEDULE (ALL) FULL_OFF_D ..
* 76 *
* 77 * LIGHT_ON_W =WEEK-SCHEDULE (WD) LIGHT_ON_D
* 78 * (WEH) LT_ON_WKND ..
* 79 *
* 80 * PEOPLE_W =WEEK-SCHEDULE (WD) PEOPLE_D
* 81 * (WEH) FULL_OFF_D ..
* 82 *
* 83 * EQUIP_W =WEEK-SCHEDULE (WD) EQUIP_ON_D
* 84 * (WEH) FULL_OFF_D ..
* 85 *
* 86 * SHOP_IFL_W =WEEK-SCHEDULE (WD) SHOP_INF_D
* 87 * (WEH) FULL_OFF_D ..
* 88 *
* 89 *
* 90 * $ FULL ON SCHEDULE
* 91 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 92 *
* 93 * $ FULL OFF SCHEDULE
* 94 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 95 *
* 96 * $ LIGHTING SCHEDULE
* 97 * LIGHT_SCHD =SCHEDULE THRU DEC 31 LIGHT_ON_W ..
* 98 *
* 99 * $ OCCUPANCY SCHEDULE
* 100 * PEOPLE_SCH =SCHEDULE THRU DEC 31 PEOPLE_W ..
* 101 *
* 102 * $ EQUIPMENT SCHEDULE
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* 103 * EQUIP_SCHD =SCHEDULE THRU DEC 31 EQUIP_W ..
* 104 *
* 105 * $ SHOP INFILTRATION SCHED
* 106 * SHOP_INFIL =SCHEDULE THRU DEC 31 SHOP_IFL_W ..
* 107 *
* 108 *
* 109 *
* 110 *
* 111 *
* 112 *
* 113 *
* 114 * FLOORCON =CONSTRUCTION U-VALUE = 0.010 ..
* 115 *
* 116 * $ ROOF CONSTRUCTION
* 117 * ROOFCON =CONSTRUCTION U-VALUE = 0.030 ..
* 118 *
* 119 * $ WALL CONSTRUCTION
* 120 * WALL_CON =CONSTRUCTION U-VALUE = 0.010 ..
* 121 * LDOORCON =CONSTRUCTION U-VALUE = 0.400 ..
* 122 * SDOORCON =CONSTRUCTION U-VALUE = 1.000 ..
* 123 *
* 124 * G_TYPE1 =GLASS-TYPE SHADING-COEF = 1.000
* 125 * PANES = 1
* 126 * GLASS-CONDUCTANCE = 1.130 ..
* 127 *
* 128 *
* 129 *
* 130 *
* 131 *
* 132 *
* 133 * $ SPACE DESCRIPTION
* 134 *
* 135 * ADMIN&TOOL =SPACE AREA = 14228.0 VOLUME = 128052.0
* 136 * TEMPERATURE = (68.) ZONE-TYPE = CONDITIONED
* 137 * PEOPLE-SCHEDULE = PEOPLE_SCH NUMBER-OF-PEOPLE = 40.0
* 138 * PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2
* 139 * PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = REC-FLUOR-RV
* 140 * LIGHTING-KW = 22.9 LIGHTING-SCHEDULE = LIGHT_SCHD
* 141 * SOURCE-SCHEDULE = FULL_ON SOURCE-TYPE = HOT-WATER
* 142 * SOURCE-BTU/HR = 23630.0 SOURCE-SENSIBLE = 0.0
* 143 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.5
* 144 * INF-SCHEDULE = FULL_ON ..
* 145 *
* 146 * U-W HEIGHT = 110.0 WIDTH = 129.5 CONS = FLOORCON ..
* 147 *
* 148 * ROOF HEIGHT = 110.0 WIDTH = 129.5 CONS = ROOFCON
* 149 * TILT = 0 ..
* 150 *
* 151 * E-W HEIGHT = 9.0 WIDTH = 129.5 CONS = WALL_CON
* 152 * AZIMUTH = 0 ..
* 153 *
* 154 * WINDOW HEIGHT = 4.0 WIDTH = 2.0 G-T = G_TYPE1
* 155 * MULTIPLIER = 13.0 ..
* 156 *
* 157 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON
* 158 * MULTIPLIER = 3.0 ..
* 159 *
* 160 * E-W HEIGHT = 9.0 WIDTH = 86.0 CONS = WALL_CON
* 161 * AZIMUTH = 0 ..
* 162 *
* 163 * WINDOW HEIGHT = 4.0 WIDTH = 4.0 G-T = G_TYPE1
* 164 * MULTIPLIER = 12.0 ..
* 165 *
* 166 * DOOR HEIGHT = 7.5 WIDTH = 2.0 CONS = SDOORCON
* 167 * MULTIPLIER = 2.0 ..
* 168 *
* 169 * VEH_MNT =SPACE AREA = 33660.0 VOLUME = 1000000.0
* 170 * TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED
* 171 * PEOPLE-SCHEDULE = PEOPLE_SCH NUMBER-OF-PEOPLE = 50.0
* 172 * PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2
* 173 * PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = INCAND
* 174 * LIGHTING-KW = 14.15 LIGHTING-SCHEDULE = LIGHT_SCHD
* 175 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0
* 176 * INF-SCHEDULE = FULL_ON ..
* 177 *
* 178 * U-W HEIGHT = 165.0 WIDTH = 204.0 CONS = FLOORCON ..
* 179 *
* 180 * ROOF HEIGHT = 165.0 WIDTH = 204.0 CONS = ROOFCON
* 181 * TILT = 0 ..
* 182 *
* 183 * E-W HEIGHT = 32.5 WIDTH = 204.0 CONS = WALL_CON
* 184 * AZIMUTH = 0 ..
* 185 *
* 186 * DOOR HEIGHT = 14.0 WIDTH = 27.0 CONS = LDOORCON
* 187 * MULTIPLIER = 6.0 ..
* 188 *
* 189 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON
* 190 * MULTIPLIER = 3.0 ..
* 191 *
* 192 * E-W HEIGHT = 32.5 WIDTH = 204.0 CONS = WALL_CON
* 193 * AZIMUTH = 180 ..
* 194 *
* 195 * DOOR HEIGHT = 14.0 WIDTH = 27.0 CONS = LDOORCON
* 196 * MULTIPLIER = 6.0 ..
* 197 *
* 198 * DOOR HEIGHT = 7.5 WIDTH = 3.0 CONS = SDOORCON
* 199 * MULTIPLIER = 3.0 ..
* 200 *
* 201 * PAINT&CUR. =SPACE AREA = 29040.0 VOLUME = 943800.0
* 202 * TEMPERATURE = (60.) ZONE-TYPE = CONDITIONED
* 203 * PEOPLE-SCHEDULE = PEOPLE_SCH NUMBER-OF-PEOPLE = 40.0
* 204 * PEOPLE-HEAT-GAIN = 450.0 PEOPLE-HG-LAT = 0.2
* 205 * PEOPLE-HG-SENS = 0.8 LIGHTING-TYPE = INCAND
* 206 * LIGHTING-KW = 8.1 LIGHTING-SCHEDULE = LIGHT_SCHD
* 207 * INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 0.96
* 208 * INF-SCHEDULE = FULL_ON ..
* 209 *
* 210 * U-W HEIGHT = 165.0 WIDTH = 176.0 CONS = FLOORCON ..

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```

* 211 *
* 212 *      ROOF      HEIGHT = 165.0  WIDTH = 176.0  CONS = ROOFCON
* 213 *      TILT = 0    ..
* 214 *
* 215 *      E-W      HEIGHT = 32.5  WIDTH = 176.0  CONS = WALL_CON
* 216 *      AZIMUTH = 0    ..
* 217 *
* 218 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 219 *      MULTIPLIER = 5.0    ..
* 220 *
* 221 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 222 *      MULTIPLIER = 2.0    ..
* 223 *
* 224 *      E-W      HEIGHT = 32.5  WIDTH = 176.0  CONS = WALL_CON
* 225 *      AZIMUTH = 180    ..
* 226 *
* 227 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 228 *      MULTIPLIER = 5.0    ..
* 229 *
* 230 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 231 *      MULTIPLIER = 2.0    ..
* 232 *
* 233 *      E-W      HEIGHT = 32.5  WIDTH = 165.0  CONS = WALL_CON
* 234 *      AZIMUTH = 270    ..
* 235 *
* 236 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 237 *      MULTIPLIER = 3.0    ..
* 238 *
* 239 *
* 240 * VEH_BOD_SH =SPACE  AREA = 14628.0  VOLUME = 475410.0
* 241 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 242 *      PEOPLE-SCHEDULE = PEOPLE SCH  NUMBER-OF-PEOPLE = 40.0
* 243 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 244 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = INCAND
* 245 *      LIGHTING-KW = 6.8  LIGHTING-SCHEDULE = LIGHT_SCHD
* 246 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.43
* 247 *      INF-SCHEDULE = FULL_ON    ..
* 248 *
* 249 *      U-W      HEIGHT = 69.0  WIDTH = 212.0  CONS = FLOORCON ..
* 250 *
* 251 *      ROOF      HEIGHT = 69.0  WIDTH = 212.0  CONS = ROOFCON
* 252 *      TILT = 0    ..
* 253 *
* 254 *      E-W      HEIGHT = 32.5  WIDTH = 212.0  CONS = WALL_CON
* 255 *      AZIMUTH = 0    ..
* 256 *
* 257 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 258 *      MULTIPLIER = 4.0    ..
* 259 *
* 260 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 261 *      MULTIPLIER = 2.0    ..
* 262 *
* 263 *      E-W      HEIGHT = 32.5  WIDTH = 212.0  CONS = WALL_CON
* 264 *      AZIMUTH = 180    ..
* 265 *
* 266 *      DOOR      HEIGHT = 14.0  WIDTH = 27.0  CONS = LDOORCON
* 267 *      MULTIPLIER = 5.0    ..
* 268 *
* 269 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 270 *      MULTIPLIER = 3.0    ..
* 271 *
* 272 *      E-W      HEIGHT = 32.5  WIDTH = 69.0  CONS = WALL_CON
* 273 *      AZIMUTH = 270    ..
* 274 *
* 275 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 276 *      MULTIPLIER = 2.0    ..
* 277 *
* 278 *
* 279 * ADMIN&ELEC =SPACE  AREA = 10085.0  VOLUME = 90765.0
* 280 *      TEMPERATURE = (68.)  ZONE-TYPE = CONDITIONED
* 281 *      PEOPLE-SCHEDULE = PEOPLE SCH  NUMBER-OF-PEOPLE = 40.0
* 282 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 283 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 284 *      LIGHTING-KW = 9.79  LIGHTING-SCHEDULE = LIGHT_SCHD
* 285 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 286 *      INF-SCHEDULE = FULL_ON    ..
* 287 *
* 288 *      U-W      HEIGHT = 83.0  WIDTH = 129.5  CONS = FLOORCON ..
* 289 *
* 290 *      ROOF      HEIGHT = 83.0  WIDTH = 129.5  CONS = ROOFCON
* 291 *      TILT = 0    ..
* 292 *
* 293 *      E-W      HEIGHT = 9.0  WIDTH = 125.0  CONS = WALL_CON
* 294 *      AZIMUTH = 270    ..
* 295 *
* 296 *      DOOR      HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 297 *      MULTIPLIER = 3.0    ..
* 298 *
* 299 *      DOOR      HEIGHT = 14.0  WIDTH = 14.5  CONS = LDOORCON ..
* 300 *
* 301 *      DOOR      HEIGHT = 9.0  WIDTH = 14.5  CONS = LDOORCON
* 302 *      MULTIPLIER = 3.0    ..
* 303 *
* 304 *
* 305 * CANVAS&ARM =SPACE  AREA = 21746.0  VOLUME = 130020.0
* 306 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 307 *      PEOPLE-SCHEDULE = PEOPLE SCH  NUMBER-OF-PEOPLE = 40.0
* 308 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 309 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 310 *      LIGHTING-KW = 13.67  LIGHTING-SCHEDULE = LIGHT_SCHD
* 311 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 312 *      INF-SCHEDULE = FULL_ON    ..
* 313 *
* 314 *      U-W      HEIGHT = 84.0  WIDTH = 259.0  CONS = FLOORCON ..
* 315 *
* 316 *      ROOF      HEIGHT = 84.0  WIDTH = 259.0  CONS = ROOFCON
* 317 *      TILT = 0    ..
* 318 *

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* 319 *      E-W      HEIGHT = 9.0  WIDTH = 129.5  CONS = WALL_CON
* 320 *      AZIMUTH = 180  ..
* 321 *
* 322 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 323 *      MULTIPLIER = 3.0  ..
* 324 *
* 325 *      E-W      HEIGHT = 25.0  WIDTH = 120.0  CONS = WALL_CON
* 326 *      AZIMUTH = 90  ..
* 327 *
* 328 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 329 *      MULTIPLIER = 3.0  ..
* 330 *
* 331 *
* 332 * PAINT&DYN =SPACE  AREA = 1775.0  VOLUME = 15975.0
* 333 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 334 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 15.0
* 335 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 336 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 337 *      LIGHTING-KW = 0.45  LIGHTING-SCHEDULE = LIGHT_SCHD
* 338 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 339 *      INF-SCHEDULE = FULL_ON  ..
* 340 *
* 341 *      U-W      HEIGHT = 22.0  WIDTH = 129.5  CONS = FLOORCON ..
* 342 *
* 343 *      ROOF     HEIGHT = 22.0  WIDTH = 129.5  CONS = ROOFCON
* 344 *      TILT = 0  ..
* 345 *
* 346 *
* 347 * SHOPSUPPLY =SPACE  AREA = 29641.0  VOLUME = 741025.0
* 348 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 349 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 350 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 351 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 352 *      LIGHTING-KW = 4.7  LIGHTING-SCHEDULE = LIGHT_SCHD
* 353 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 354 *      INF-SCHEDULE = FULL_ON  ..
* 355 *
* 356 *      U-W      HEIGHT = 228.9  WIDTH = 129.5  CONS = FLOORCON ..
* 357 *
* 358 *      ROOF     HEIGHT = 228.5  WIDTH = 129.5  CONS = ROOFCON
* 359 *      TILT = 0  ..
* 360 *
* 361 *      E-W      HEIGHT = 25.0  WIDTH = 211.0  CONS = WALL_CON
* 362 *      AZIMUTH = 0  ..
* 363 *
* 364 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 365 *      MULTIPLIER = 2.0  ..
* 366 *
* 367 *      DOOR     HEIGHT = 8.0  WIDTH = 8.0  CONS = LDOORCON
* 368 *      MULTIPLIER = 2.0  ..
* 369 *
* 370 *
* 371 * BATTERIES =SPACE  AREA = 4705.0  VOLUME = 84690.0
* 372 *      TEMPERATURE = (60.)  ZONE-TYPE = CONDITIONED
* 373 *      PEOPLE-SCHEDULE = PEOPLE_SCH  NUMBER-OF-PEOPLE = 40.0
* 374 *      PEOPLE-HEAT-GAIN = 450.0  PEOPLE-HG-LAT = 0.2
* 375 *      PEOPLE-HG-SENS = 0.8  LIGHTING-TYPE = REC-FLUOR-RV
* 376 *      LIGHTING-KW = 11.08  LIGHTING-SCHEDULE = LIGHT_SCHD
* 377 *      INF-METHOD = AIR-CHANGE  AIR-CHANGES/HR = 0.5
* 378 *      INF-SCHEDULE = FULL_ON  ..
* 379 *
* 380 *      U-W      HEIGHT = 39.2  WIDTH = 120.0  CONS = FLOORCON ..
* 381 *
* 382 *      ROOF     HEIGHT = 39.2  WIDTH = 120.0  CONS = ROOFCON
* 383 *      TILT = 0  ..
* 384 *
* 385 *      E-W      HEIGHT = 18.0  WIDTH = 120.0  CONS = WALL_CON
* 386 *      AZIMUTH = 180  ..
* 387 *
* 388 *      DOOR     HEIGHT = 7.5  WIDTH = 3.0  CONS = SDOORCON
* 389 *      MULTIPLIER = 2.0  ..
* 390 *
* 391 *
* 392 * PAINT_BTHS =SPACE  AREA = 3742.0  VOLUME = 44688.0
* 393 *      TEMPERATURE = (72.)  ZONE-TYPE = CONDITIONED
* 394 *      AREA/PERSON = 100.0  INF-METHOD = NONE  ..
* 395 *
* 396 *      U-W      HEIGHT = 61.2  WIDTH = 61.2  CONS = FLOORCON ..
* 397 *
* 398 *      ROOF     HEIGHT = 61.2  WIDTH = 61.2  CONS = ROOFCON
* 399 *      TILT = 0  ..
* 400 *
* 401 *
* 402 * END  ..
* 403 * COMPUTE LOADS  ..
* 404 *
* 405 * INPUT SYSTEMS  ..

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SDL PROCESSOR INPUT DATA

3/18/1995 17: 5:42 SDL RUN 1

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* 406 *
* 407 *
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\$-----\$  
 \$EZ - DOE SYSTEMS INPUT \$  
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\$ GENERAL PROJECT DATA

TITLE LINE-1 \* EMC ENGINEERS INC. \*  
 LINE-2 \*EZDOE - ELITE SOFTWARE DEVELOPMENT INC\*  
 LINE-3 \* DENVER, CO 80227 \*  
 LINE-4 \*BUILDING 4530, SMA BUILDING \*  
 LINE-5 \*SET BACK, DDC, AND FORCED VENTILATION \* ..  
 ABORT ERRORS ..  
 DIAGNOSTIC WARNINGS ..  
 SYSTEMS-REPORT SUMMARY=(SS-A,SS-C,SS-F,SS-K,SS-O)  
 HOURLY-DATA-SAVE = YES ..

\$ SCHEDULES

FULL\_ON\_D =DAY-SCHEDULE (1,24) (1.) ..  
 FULL\_OFF\_D =DAY-SCHEDULE (1,24) (0.) ..  
 HEAT\_H\_D =DAY-SCHEDULE (1,6) (55.)  
 (7,17) (68.) ..  
 (18,24) (55.) ..  
 HEAT\_L\_D =DAY-SCHEDULE (1,6) (47.)  
 (7,17) (60.) ..  
 (18,24) (47.) ..  
 HEAT\_68\_D =DAY-SCHEDULE (1,24) (68.) ..  
 HEAT\_60\_D =DAY-SCHEDULE (1,24) (60.) ..  
 HEAT\_72\_D =DAY-SCHEDULE (1,24) (72.) ..  
 PAINT\_MAUD =DAY-SCHEDULE (1,7) (0.)  
 (8,17) (1.) ..  
 (18,24) (0.) ..  
 FAN\_WSB\_D =DAY-SCHEDULE (1,5) (0.)  
 (6,15) (1.) ..  
 (16,24) (0.) ..  
 HT60\_WSB\_D =DAY-SCHEDULE (1,5) (47.)  
 (6,15) (60.) ..  
 (16,24) (47.) ..  
 HEAT\_50\_D =DAY-SCHEDULE (1,24) (50.) ..  
 HT68\_WSB\_D =DAY-SCHEDULE (1,5) (50.)  
 (6,15) (68.) ..  
 (16,24) (50.) ..  
 HV2\_SB\_D =DAY-SCHEDULE (1,5) (65.)  
 (6,15) (68.) ..  
 (16,24) (65.) ..  
 HEAT\_47\_D =DAY-SCHEDULE (1,24) (47.) ..  
 MOA.2\_D =DAY-SCHEDULE (1,6) (0.)  
 (7,15) (0.2) ..  
 (16,24) (0.) ..  
 MOA.33\_D =DAY-SCHEDULE (1,6) (0.)  
 (7,15) (0.33) ..  
 (16,24) (0.) ..

FULL\_ON\_W =WEEK-SCHEDULE (ALL) FULL\_ON\_D ..  
 FULL\_OFF\_W =WEEK-SCHEDULE (ALL) FULL\_OFF\_D ..  
 HEAT\_H\_W =WEEK-SCHEDULE (ALL) HEAT\_H\_D ..  
 HEAT\_L\_W =WEEK-SCHEDULE (ALL) HEAT\_L\_D ..  
 HEAT\_68\_W =WEEK-SCHEDULE (ALL) HEAT\_68\_D ..  
 HEAT\_60\_W =WEEK-SCHEDULE (ALL) HEAT\_60\_D ..  
 HEAT\_72\_W =WEEK-SCHEDULE (ALL) HEAT\_72\_D ..  
 PAINT\_MAUW =WEEK-SCHEDULE (WD) PAINT MAUD  
 (WEH) FULL\_OFF\_D ..  
 FAN\_WSB\_W =WEEK-SCHEDULE (WD) FAN\_WSB\_D  
 (SAT) FULL\_OFF\_D  
 (SUN) FULL\_OFF\_D  
 (HOL) FAN\_WSB\_D ..  
 HT60\_WSB\_W =WEEK-SCHEDULE (WD) HT60\_WSB\_D  
 (SAT) HEAT\_47\_D  
 (SUN) HEAT\_47\_D  
 (HOL) HT60\_WSB\_D ..  
 HT68\_WSB\_W =WEEK-SCHEDULE (WD) HT68\_WSB\_D  
 (SAT) HEAT\_50\_D  
 (SUN) HEAT\_50\_D  
 (HOL) HT68\_WSB\_D ..  
 HV2\_HTSB\_W =WEEK-SCHEDULE (ALL) HV2\_SB\_D ..  
 MOA.2\_W =WEEK-SCHEDULE (WD) MOA.2\_D  
 (SAT) FULL\_OFF\_D  
 (SUN) FULL\_OFF\_D  
 (HOL) MOA.2\_D ..  
 MOA.33\_W =WEEK-SCHEDULE (WD) MOA.33\_D  
 (SAT) FULL\_OFF\_D  
 (SUN) FULL\_OFF\_D  
 (HOL) MOA.33\_D ..

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* 506 *
* 507 * $ FULL ON SCHEDULE
* 508 * FULL_ON =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 509 *
* 510 * $ FULL OFF SCHEDULE
* 511 * FULL_OFF =SCHEDULE THRU DEC 31 FULL_OFF_W ..
* 512 *
* 513 * $ HIGH HEAT SCHEDULE
* 514 * HEAT_H_SCH =SCHEDULE THRU DEC 31 HEAT_H_W ..
* 515 *
* 516 * $ HEAT LOW SCHEDULE
* 517 * HEAT_L_SCH =SCHEDULE THRU DEC 31 HEAT_L_W ..
* 518 *
* 519 * $ HEAT 68 DEG
* 520 * HEAT_68_Y =SCHEDULE THRU DEC 31 HEAT_68_W ..
* 521 *
* 522 * $ HEAT 60 DEG
* 523 * HEAT_60_Y =SCHEDULE THRU DEC 31 HEAT_60_W ..
* 524 *
* 525 * $ HEAT 72 DEG
* 526 * HEAT_72_Y =SCHEDULE THRU DEC 31 HEAT_72_W ..
* 527 *
* 528 * $ PAINT BOOTH MAU SCHED
* 529 * PAINT_MAU =SCHEDULE THRU DEC 31 PAINT_MAUW ..
* 530 *
* 531 * $ FAN SCHD WITH SET BACK
* 532 * FAN_W_SB =SCHEDULE THRU DEC 31 FAN_WSB_W ..
* 533 *
* 534 * $ HEAT 60F W SET BACK
* 535 * HT60_W_SB =SCHEDULE THRU DEC 31 HT60_WSB_W ..
* 536 *
* 537 * HT68_W_SB =SCHEDULE THRU DEC 31 HT68_WSB_W ..
* 538 *
* 539 * $ HV2 SETBACK SCHED
* 540 * HV2_HT_SB =SCHEDULE THRU DEC 31 HV2 HTSB_W ..
* 541 *
* 542 * MOA_.2_FV =SCHEDULE THRU DEC 31 MOA.2_W ..
* 543 *
* 544 * MOA_.33_FV =SCHEDULE THRU DEC 31 MOA.33_W ..
* 545 *
* 546 *
* 547 *
* 548 * $ ZONE DESCRIPTION
* 549 *
* 550 * ADMIN&TOOL =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 551 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 552 * THERMOSTAT-TYPE = PROPORTIONAL
* 553 * BASEBOARD-CTRL = THERMOSTATIC
* 554 * BASEBOARD-RATING = -66440. ASSIGNED-CFM = 23765.
* 555 * OUTSIDE-AIR-CFM = 4700. SIZING-OPTION = FROM-LOADS
* 556 * RATED-CFM = 23765.0 MIN-CFM-RATIO = 1.0
* 557 * EXHAUST-CFM = 4700.0 HEATING-CAPACITY = -510100.0 ..
* 558 *
* 559 * VEH_MNT =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 560 * HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
* 561 * THERMOSTAT-TYPE = PROPORTIONAL
* 562 * BASEBOARD-CTRL = THERMOSTATIC
* 563 * BASEBOARD-RATING = -750000. ASSIGNED-CFM = 51300.
* 564 * OUTSIDE-AIR-CFM = 51300. SIZING-OPTION = FROM-LOADS
* 565 * RATED-CFM = 51300.0 MIN-CFM-RATIO = 1.0
* 566 * EXHAUST-CFM = 51300.0 HEATING-CAPACITY = -3698000.0 ..
* 567 *
* 568 * PAINT&CUR. =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 569 * HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
* 570 * THERMOSTAT-TYPE = PROPORTIONAL
* 571 * BASEBOARD-CTRL = THERMOSTATIC
* 572 * BASEBOARD-RATING = -613000. ASSIGNED-CFM = 35460.
* 573 * OUTSIDE-AIR-CFM = 35460. SIZING-OPTION = FROM-LOADS
* 574 * RATED-CFM = 35460.0 MIN-CFM-RATIO = 1.0
* 575 * HEATING-CAPACITY = -2560000.0 ..
* 576 *
* 577 * VEH_BOD_SH =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 578 * HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
* 579 * THERMOSTAT-TYPE = PROPORTIONAL
* 580 * BASEBOARD-CTRL = THERMOSTATIC
* 581 * BASEBOARD-RATING = -385000. ASSIGNED-CFM = 30360.
* 582 * OUTSIDE-AIR-CFM = 30360. SIZING-OPTION = FROM-LOADS
* 583 * RATED-CFM = 30360.0 MIN-CFM-RATIO = 1.0
* 584 * HEATING-CAPACITY = -2196000.0 ..
* 585 *
* 586 * ADMIN&ELEC =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 75.0
* 587 * HEAT-TEMP-SCH = HV2 HT_SB ZONE-TYPE = CONDITIONED
* 588 * THERMOSTAT-TYPE = PROPORTIONAL
* 589 * BASEBOARD-CTRL = THERMOSTATIC
* 590 * BASEBOARD-RATING = -17200. ASSIGNED-CFM = 30170.
* 591 * OUTSIDE-AIR-CFM = 22290. SIZING-OPTION = FROM-LOADS
* 592 * RATED-CFM = 30170.0 MIN-CFM-RATIO = 1.0
* 593 * EXHAUST-CFM = 22290.0 HEATING-CAPACITY = -1905300.0 ..
* 594 *
* 595 * CANVAS&ARM =ZONE DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 80.0
* 596 * HEAT-TEMP-SCH = HT68_W_SB ZONE-TYPE = CONDITIONED
* 597 * THERMOSTAT-TYPE = PROPORTIONAL
* 598 * BASEBOARD-CTRL = THERMOSTATIC
* 599 * BASEBOARD-RATING = -29400. ASSIGNED-CFM = 24090.
* 600 * OUTSIDE-AIR-CFM = 7970. SIZING-OPTION = FROM-LOADS
* 601 * RATED-CFM = 24090.0 MIN-CFM-RATIO = 1.0
* 602 * EXHAUST-CFM = 7970.0 HEATING-CAPACITY = -816700.0 ..
* 603 *
* 604 * PAINT&DYN =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 605 * HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED
* 606 * THERMOSTAT-TYPE = PROPORTIONAL
* 607 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 5400.
* 608 * OUTSIDE-AIR-CFM = 5400. SIZING-OPTION = FROM-LOADS
* 609 * RATED-CFM = 5400.0 MIN-CFM-RATIO = 1.0
* 610 * EXHAUST-CFM = 5400.0 HEATING-CAPACITY = -498400.0 ..
* 611 *
* 612 * SHOPSUPPLY =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 613 * HEAT-TEMP-SCH = HT60_W_SB ZONE-TYPE = CONDITIONED

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* 614 * THERMOSTAT-TYPE = PROPORTIONAL
* 615 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 27700.
* 616 * SIZING-OPTION = FROM-LOADS RATED-CFM = 27700.0
* 617 * MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -996800.0 ..
* 618 *
* 619 * BATTERIES =ZONE DESIGN-HEAT-T = 60.0 DESIGN-COOL-T = 80.0
* 620 * HEAT-TEMP-SCH = HT60 W_SB ZONE-TYPE = CONDITIONED
* 621 * THERMOSTAT-TYPE = PROPORTIONAL
* 622 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 21000.
* 623 * OUTSIDE-AIR-CFM = 21000. SIZING-OPTION = FROM-LOADS
* 624 * RATED-CFM = 21000.0 MIN-CFM-RATIO = 1.0
* 625 * EXHAUST-CFM = 21000.0 HEATING-CAPACITY = -1645000.0 ..
* 626 *
* 627 * PAINT_BTHS =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 85.0
* 628 * HEAT-TEMP-SCH = HEAT 72 Y ZONE-TYPE = CONDITIONED
* 629 * THERMOSTAT-TYPE = PROPORTIONAL
* 630 * BASEBOARD-CTRL = THERMOSTATIC ASSIGNED-CFM = 49700.
* 631 * OUTSIDE-AIR-CFM = 49700. SIZING-OPTION = FROM-LOADS
* 632 * RATED-CFM = 49700.0 MIN-CFM-RATIO = 1.0
* 633 * EXHAUST-CFM = 49700.0 HEATING-CAPACITY = -4255000.0 ..
* 634 *
* 635 *
* 636 * $ SYSTEM DESCRIPTION
* 637 *
* 638 * HV_1 =SYSTEM SYSTEM-TYPE = HVSYS
* 639 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 640 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 641 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 642 * SUPPLY-CFM = 23765. RETURN-CFM = 19012.
* 643 * RATED-CFM = 23765. MIN-OUTSIDE-AIR = 0.2
* 644 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 645 * SUPPLY-KW = 0.00078
* 646 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 647 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 648 * HEATING-CAPACITY = -510100. FURNACE-AUX = 0.
* 649 * ZONE-NAMES = (ADMIN&TOOL) ..
* 650 *
* 651 * HV_2 =SYSTEM SYSTEM-TYPE = HVSYS
* 652 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 653 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 654 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 655 * SUPPLY-CFM = 30170. RETURN-CFM = 7844.
* 656 * RATED-CFM = 30170. MIN-OUTSIDE-AIR = 0.74
* 657 * FAN-SCHEDULE = FULL_ON SUPPLY-DELTA-T = 2.4
* 658 * SUPPLY-KW = 0.00078
* 659 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 660 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 661 * HEATING-CAPACITY = -1905300. FURNACE-AUX = 0.
* 662 * ZONE-NAMES = (ADMIN&ELEC) ..
* 663 *
* 664 * HV_3 =SYSTEM SYSTEM-TYPE = HVSYS
* 665 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 666 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 667 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 668 * SUPPLY-CFM = 24090. RETURN-CFM = 16120.
* 669 * RATED-CFM = 24090. MIN-OUTSIDE-AIR = 0.33
* 670 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 671 * SUPPLY-KW = 0.00078
* 672 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 673 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 674 * HEATING-CAPACITY = -855600. FURNACE-AUX = 0.
* 675 * ZONE-NAMES = (CANVAS&ARM) ..
* 676 *
* 677 * MAU_5 =SYSTEM SYSTEM-TYPE = HVSYS
* 678 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 679 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 680 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 681 * SUPPLY-CFM = 5400. RATED-CFM = 5400.
* 682 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 683 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 684 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 685 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 686 * HEATING-CAPACITY = -498400. FURNACE-AUX = 0.
* 687 * ZONE-NAMES = (PAINT&DYN) ..
* 688 *
* 689 * SUPPLY_UH =SYSTEM SYSTEM-TYPE = UHT
* 690 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 691 * RATED-CFM = 27700. SUPPLY-DELTA-T = 0.18
* 692 * SUPPLY-KW = 0.000059
* 693 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY
* 694 * HEATING-CAPACITY = -996800. FURNACE-AUX = 0.
* 695 * ZONE-NAMES = (SHOPSUPPLY) ..
* 696 *
* 697 * MAU_6&7 =SYSTEM SYSTEM-TYPE = HVSYS
* 698 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 699 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 700 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 701 * SUPPLY-CFM = 42220. RATED-CFM = 42220.
* 702 * MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 703 * SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 704 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 705 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 706 * HEATING-CAPACITY = -1645000. FURNACE-AUX = 0.
* 707 * ZONE-NAMES = (BATTERIES) ..
* 708 *
* 709 * MAU_1&2A =SYSTEM SYSTEM-TYPE = HVSYS
* 710 * MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 711 * MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 712 * ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 713 * SUPPLY-CFM = 51300. RATED-CFM = 51300.
* 714 * MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.2
* 715 * FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 716 * SUPPLY-KW = 0.00078
* 717 * MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 718 * NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 719 * HEATING-CAPACITY = -3698000. FURNACE-AUX = 0.
* 720 * ZONE-NAMES = (VEH_MNT) ..
* 721 *

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* 722 * MAU_1&2B =SYSTEM    SYSTEM-TYPE = HVSYS
* 723 *                      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 724 *                      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 725 *                      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 726 *                      SUPPLY-CFM = 35460. RATED-CFM = 35460.
* 727 *                      MIN-OUTSIDE-AIR = 1.0 RECOVERY-EFF = 0.2
* 728 *                      FAN-SCHEDULE = FAN_W_SB SUPPLY-DELTA-T = 2.4
* 729 *                      SUPPLY-KW = 0.00078
* 730 *                      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 731 *                      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 732 *                      HEATING-CAPACITY = -2560000. FURNACE-AUX = 0.
* 733 *                      ZONE-NAMES = (PAINT&CUR.) ..
* 734 *
* 735 * MAU_3 =SYSTEM        SYSTEM-TYPE = HVSYS
* 736 *                      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = FULL_ON
* 737 *                      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 738 *                      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 739 *                      SUPPLY-CFM = 30360. RATED-CFM = 30360.
* 740 *                      MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = FAN_W_SB
* 741 *                      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 742 *                      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 743 *                      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 744 *                      HEATING-CAPACITY = -2196000. FURNACE-AUX = 0.
* 745 *                      ZONE-NAMES = (VEH_BOD_SH) ..
* 746 *
* 747 * MAU_4_8_&9 =SYSTEM   SYSTEM-TYPE = HVSYS
* 748 *                      MAX-SUPPLY-T = 135.0 HEATING-SCHEDULE = PAINT_MAU
* 749 *                      MIN-HUMIDITY = 30.0 ECONO-LIMIT-T = 65.0
* 750 *                      ECONO-LOW-LIMIT = 55.0 HEAT-CONTROL = COLDEST
* 751 *                      SUPPLY-CFM = 49700. RATED-CFM = 49700.
* 752 *                      MIN-OUTSIDE-AIR = 1.0 FAN-SCHEDULE = PAINT_MAU
* 753 *                      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
* 754 *                      MOTOR-PLACEMENT = OUTSIDE-AIRFLOW
* 755 *                      NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
* 756 *                      HEATING-CAPACITY = -4245000. FURNACE-AUX = 0.
* 757 *                      ZONE-NAMES = (PAINT_BTHS) ..
* 758 *
* 759 * END ..
* 760 * COMPUTE SYSTEMS ..
* 761 *
* 762 * INPUT PLANT ..

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PDL PROCESSOR INPUT DATA

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* 763 *
* 764 *
* 765 *      $-----$
* 766 *      $EZ - DOE PLANTS INPUT$
* 767 *      $-----$
* 768 *
* 769 *      $ GENERAL PROJECT DATA
* 770 *
* 771 * TITLE LINE-1 *      EMC      ENGINEERS      INC.      *
* 772 *      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
* 773 *      LINE-3 *      DENVER,      CO      80227      *
* 774 *
* 775 *      LINE-4 *BUILDING 4530, SMA BUILDING      *
* 776 *      LINE-5 *SET BACK, DDC, AND FORCED VENTILATION * ..
* 777 *
* 778 * ABORT      ERRORS ..
* 779 * DIAGNOSTIC      WARNINGS ...
* 780 * PLANT-REPORT      SUMMARY= (PS-A, PS-B, BEPS)
* 781 *
* 782 *      HOURLY-DATA-SAVE = YES ..
* 783 *
* 784 *      $ SCHEDULES
* 785 *
* 786 * FULL_ON_D =DAY-SCHEDULE (1,24) (1.) ..
* 787 *
* 788 *
* 789 * FULL_ON_W =WEEK-SCHEDULE (ALL) FULL_ON_D ..
* 790 *
* 791 *
* 792 * $ FULL ON SCHEDULE
* 793 * FULL_ON_SC =SCHEDULE THRU DEC 31 FULL_ON_W ..
* 794 *
* 795 *
* 796 *
* 797 *      $ EQUIPMENT DESCRIPTION
* 798 *
* 799 * HTP_1      =PLANT-EQUIPMENT TYPE = HTANK-STORAGE
* 800 *      SIZE = 22.4 ..
* 801 *
* 802 * PLANT-PARAMETERS      CCIRC-HEAD = 63.2 HCIRC-HEAD = 100.0
* 803 *      HCIRC-DESIGN-T-DROP = 20.0 ..
* 804 *
* 805 *
* 806 * ENERGY-RESOURCE      RESOURCE = ELECTRICITY ..
* 807 * ENERGY-RESOURCE      RESOURCE = STEAM ..
* 808 *
* 809 * ENERGY-STORAGE      HEAT-STORE-RATE = 22.4 HEAT-SUPPLY-RATE = 22.4
* 810 *      HTANK-BASE-T = 195.0 HTANK-T-RANGE = 5.0
* 811 *      HEAT-STORE-SCH = FULL_ON_SC ..
* 812 *
* 813 * HEAT-RECOVERY
* 814 *      SUPPLY-1 = (HTANK-STORAGE)
* 815 *      DEMAND-1 = (SPACE-HEAT, PROCESS-HEAT) ..
* 816 *
* 817 *
* 818 *
* 819 * END ..
* 820 * COMPUTE PLANT ..
* 821 * STOP ..

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ENERGY TYPE IN SITE MBTU-	STEAM	ELECTRICITY	RECOVERED
CATEGORY OF USE			
SPACE HEAT	29,577.50	0.00	
SPACE COOL	0.00	0.00	
HVAC AUX	0.00	5,040.77	
DOM HOT WTR	207.01	0.00	
AUX SOLAR	0.00	0.00	
LIGHTS	0.00	893.57	
VERT TRANS	0.00	0.00	
MISC EQUIP	0.00	0.00	
	-----	-----	
TOTAL	29,784.51	5,934.35	

TOTAL SITE ENERGY 35718.89 MBTU 218.8 KBTU/SQFT-YR GROSS-AREA 218.8 KBTU/SQFT-YR NET-AREA  
 TOTAL SOURCE ENERGY 67461.87 MBTU 413.2 KBTU/SQFT-YR GROSS-AREA 413.2 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 11.8  
 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED  
 ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

MO	UTILITY-	STEAM	ELECTRICITY
	TOTAL (MBTU)	6608.349	585.494
JAN	PEAK (KBTU)	25113.384	1251.289
	DY/HR	5/12	31/11
	TOTAL (MBTU)	4477.930	497.904
FEB	PEAK (KBTU)	21627.304	1251.118
	DY/HR	14/ 9	4/10
	TOTAL (MBTU)	4373.149	545.270
MAR	PEAK (KBTU)	21544.560	1250.391
	DY/HR	9/ 9	14/10
	TOTAL (MBTU)	2081.119	508.036
APR	PEAK (KBTU)	14886.328	1248.631
	DY/HR	1/ 9	25/10
	TOTAL (MBTU)	1120.207	495.498
MAY	PEAK (KBTU)	12542.688	1248.309
	DY/HR	16/ 8	3/10
	TOTAL (MBTU)	410.007	412.064
JUN	PEAK (KBTU)	5725.480	1245.708
	DY/HR	8/ 6	30/14
	TOTAL (MBTU)	406.003	401.512
JUL	PEAK (KBTU)	3933.062	1245.708
	DY/HR	25/ 6	29/14
	TOTAL (MBTU)	424.280	431.170
AUG	PEAK (KBTU)	4595.550	1245.708
	DY/HR	22/ 6	31/14
	TOTAL (MBTU)	731.091	469.933
SEP	PEAK (KBTU)	8296.202	1246.777
	DY/HR	23/ 9	23/10
	TOTAL (MBTU)	1596.780	515.904
OCT	PEAK (KBTU)	14087.488	1247.920
	DY/HR	28/ 9	26/11
	TOTAL (MBTU)	2869.428	519.197
NOV	PEAK (KBTU)	17847.584	1249.372
	DY/HR	28/ 9	21/10
	TOTAL (MBTU)	4686.111	552.449
DEC	PEAK (KBTU)	21885.912	1250.519
	DY/HR	28/ 9	30/10
	ONE YEAR	29784.455	5934.433
	USE/PEAK	25113.384	1251.289